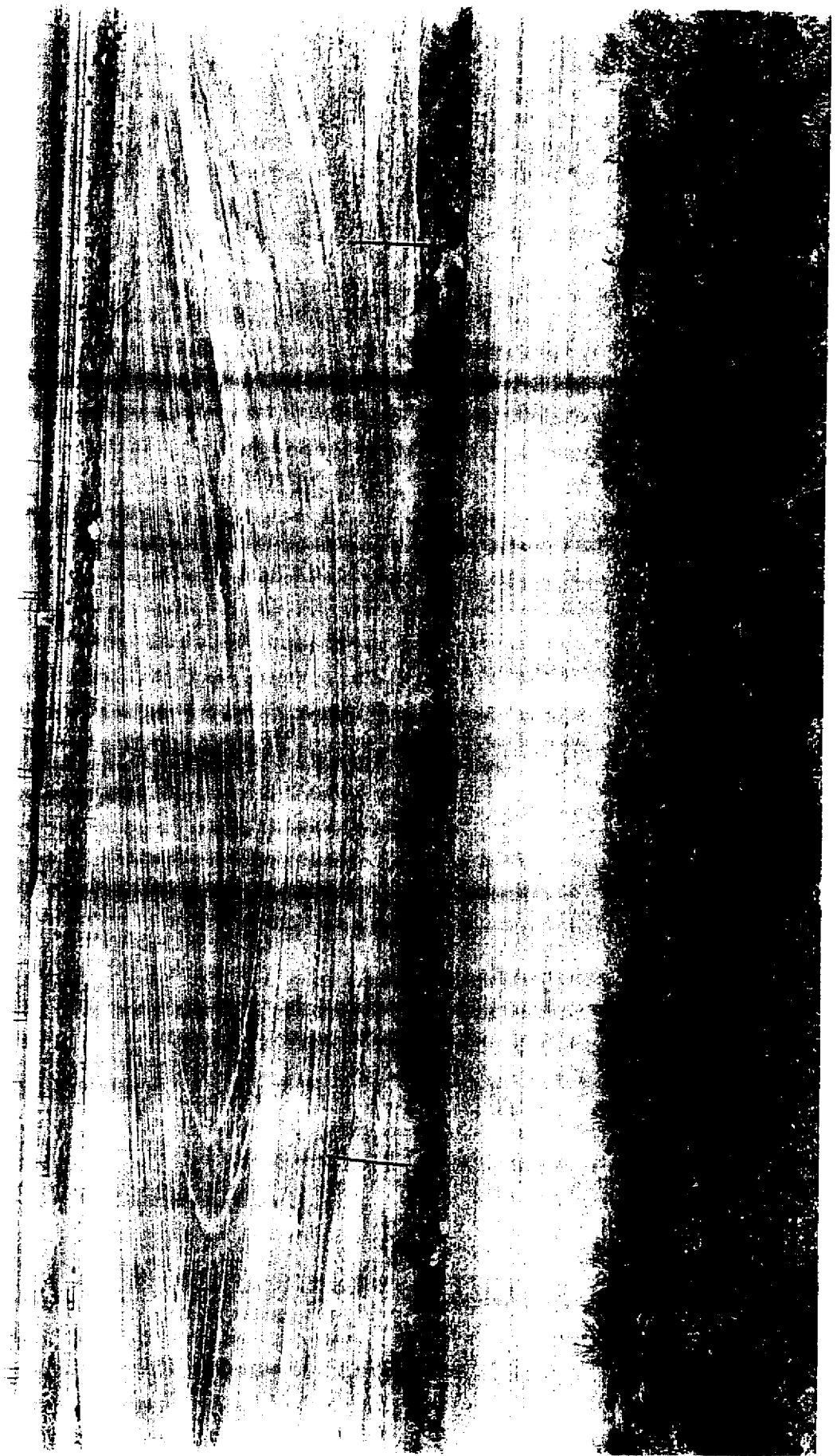


Appendix E
Photographs



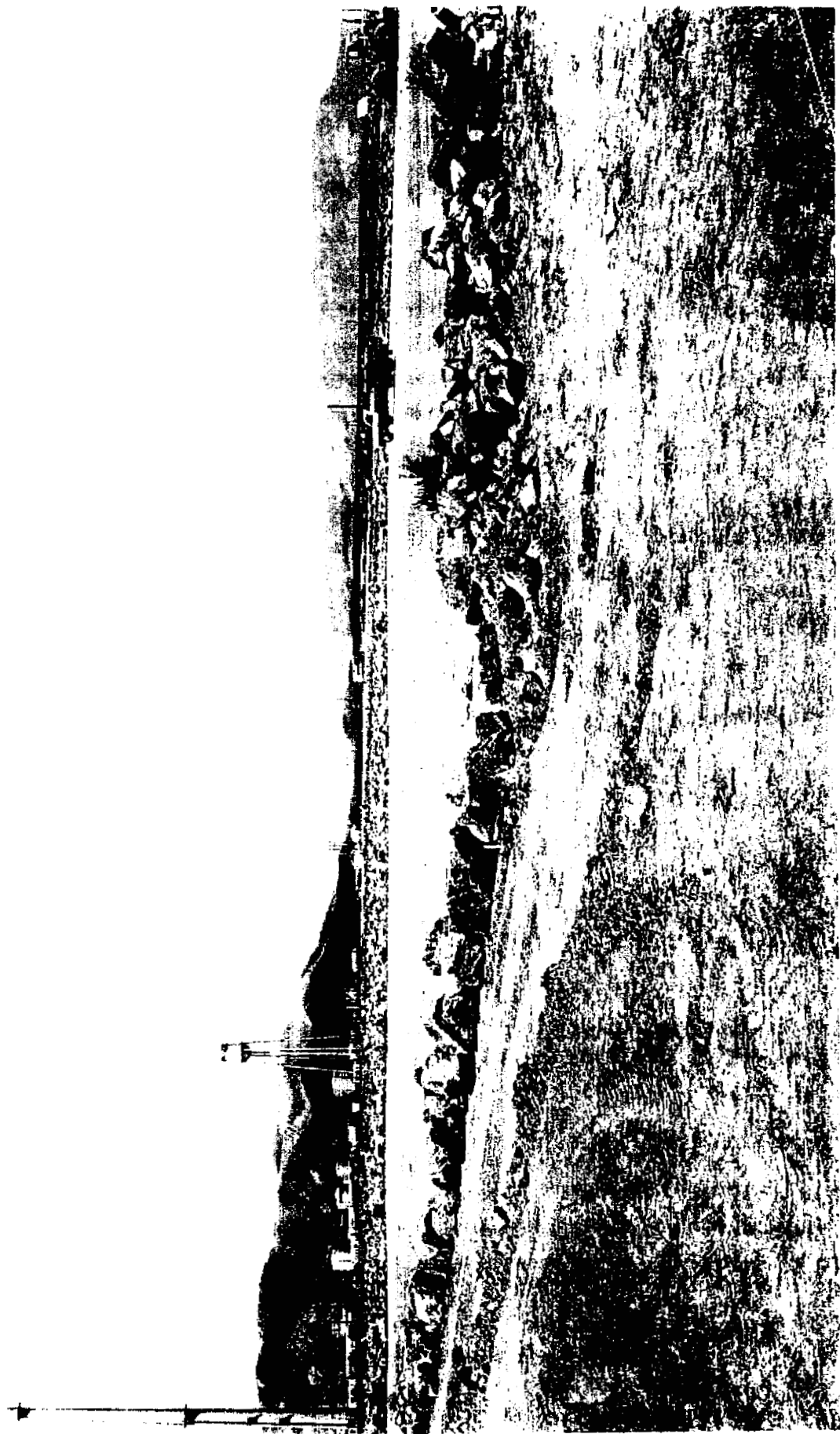
Photograph 1. SLP final complete.

PN99-0229-1-3



PN99-0229-1-2

Photo h 2. SLP final complete.



Photograph 3. WWP 1964 Cell riprap placement.

PN99-0339-1-28





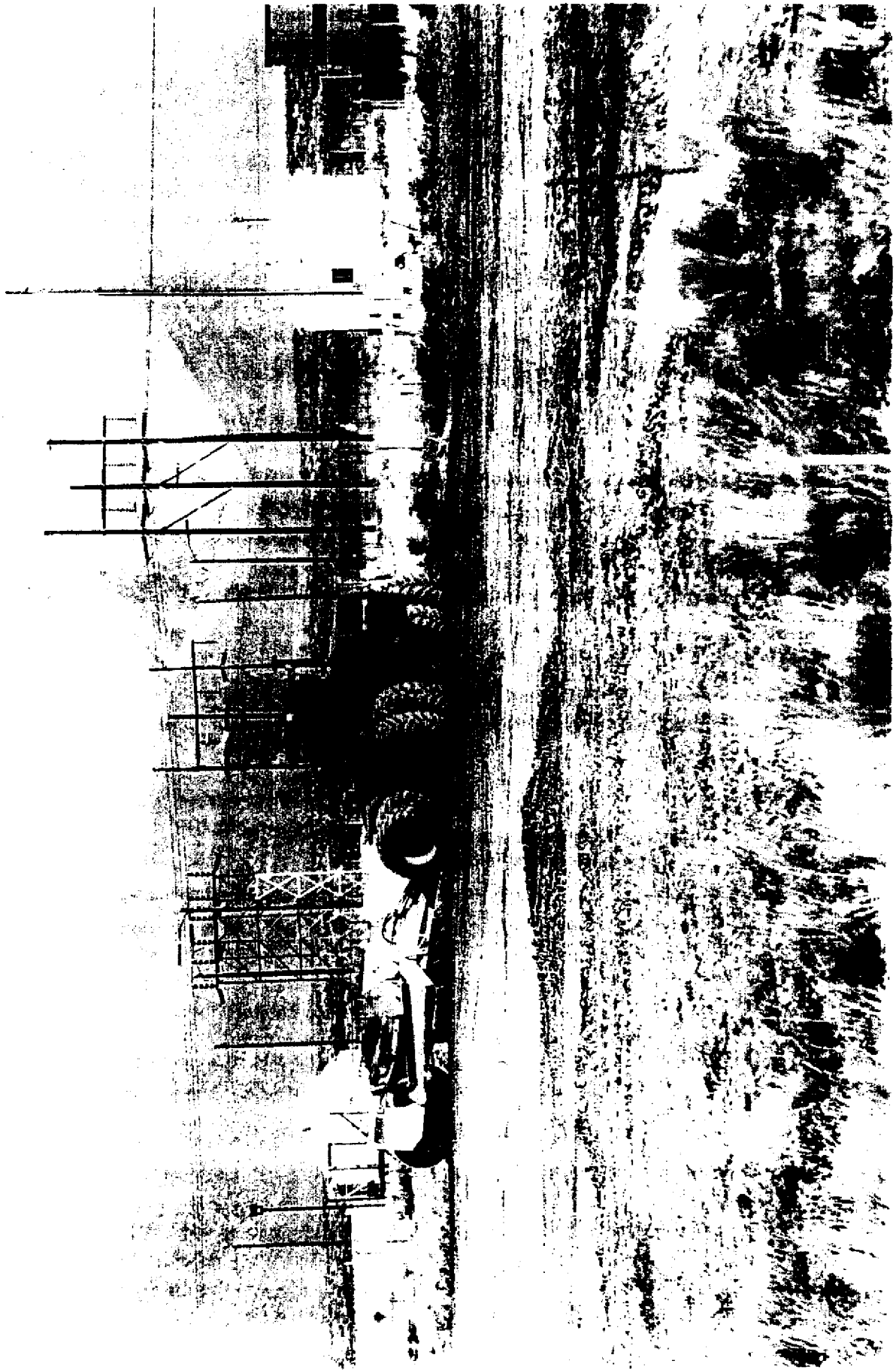
PN99-0216-1-1

Photograph 5. SLP backfilling for final grade.



PN99-0203-1-3

Photo h 6. SLP rough grade complete.



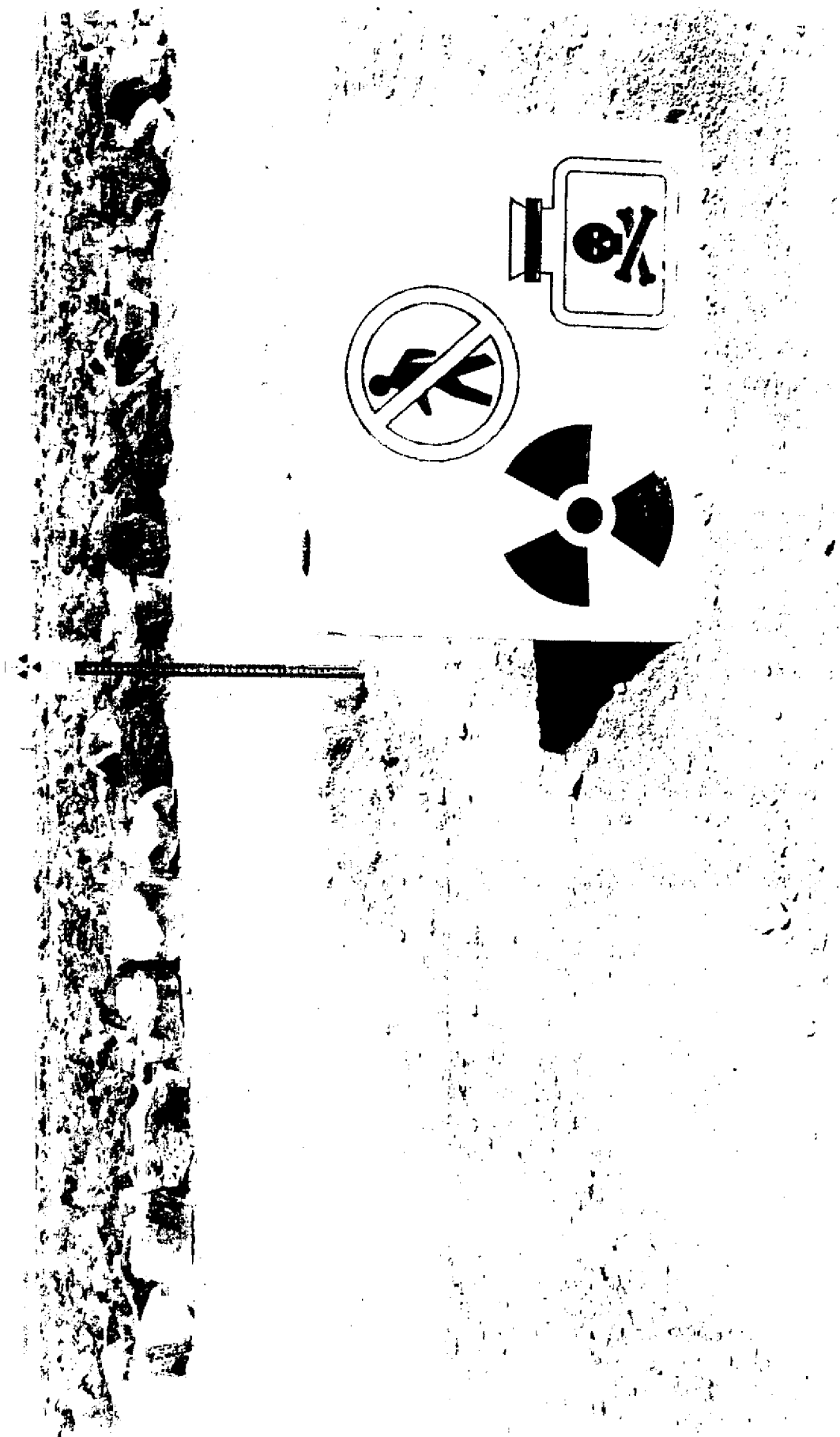
Photograph 7. CP backfill operations for final grade.

PN99-0203-1-9



PN99-0354-1-1

Photo h 8. WPP 1964 Cell riprap layer complete.



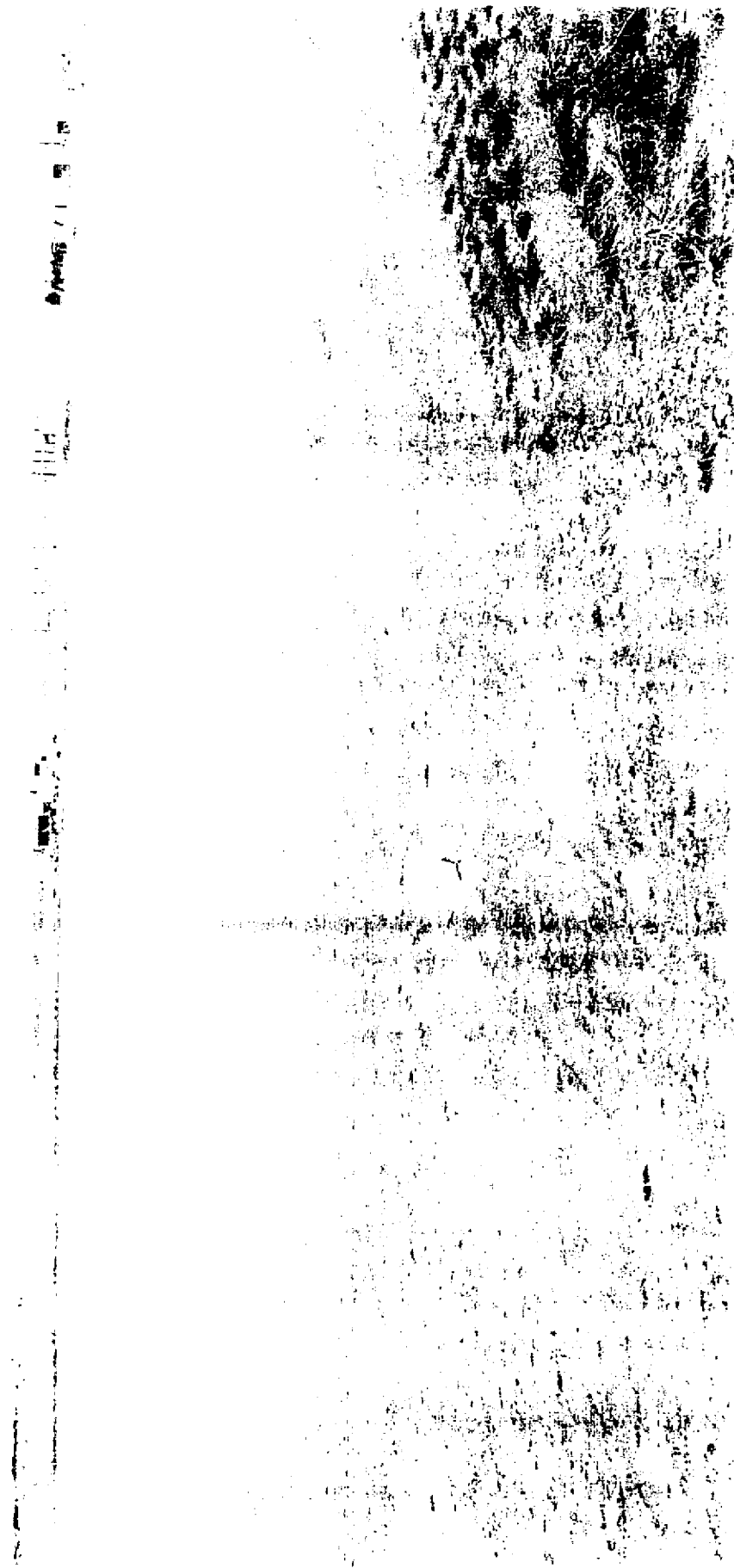
Photograph 9. WWP 1957 Cell monument.

PN99-0536-1-3



Photo 10. WWP 1957 Cell boundary sign.

PN99-0536-1-2



PN99-0264-1-18

Photograph 11. WWP 1964 Cell rough grade complete.



Photo 12. CP remaining berms around CP.

PN99-0264-1-15



Photograph 13. SLP rough grade backfill operations.

PN99-0177-1-13

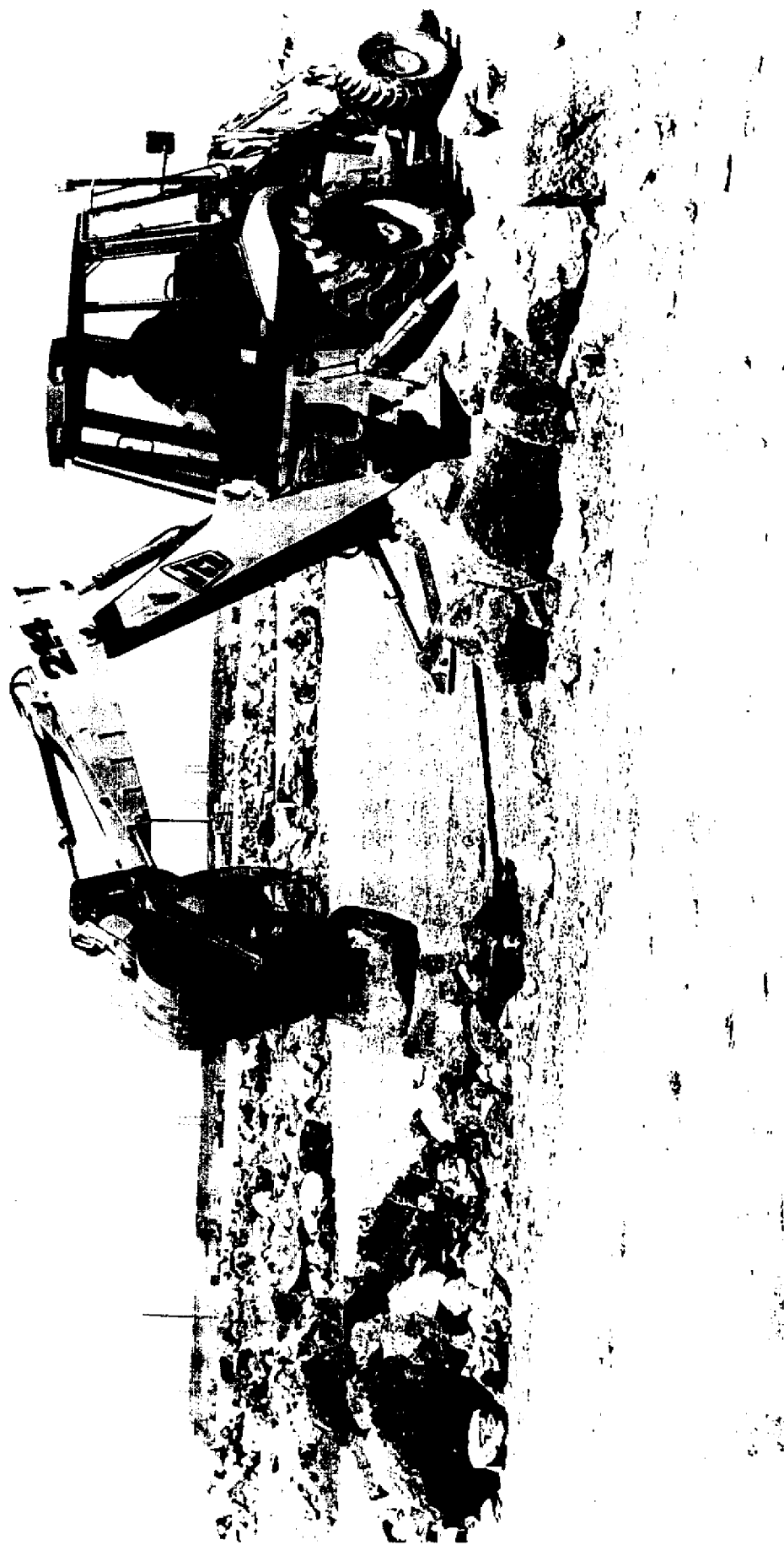
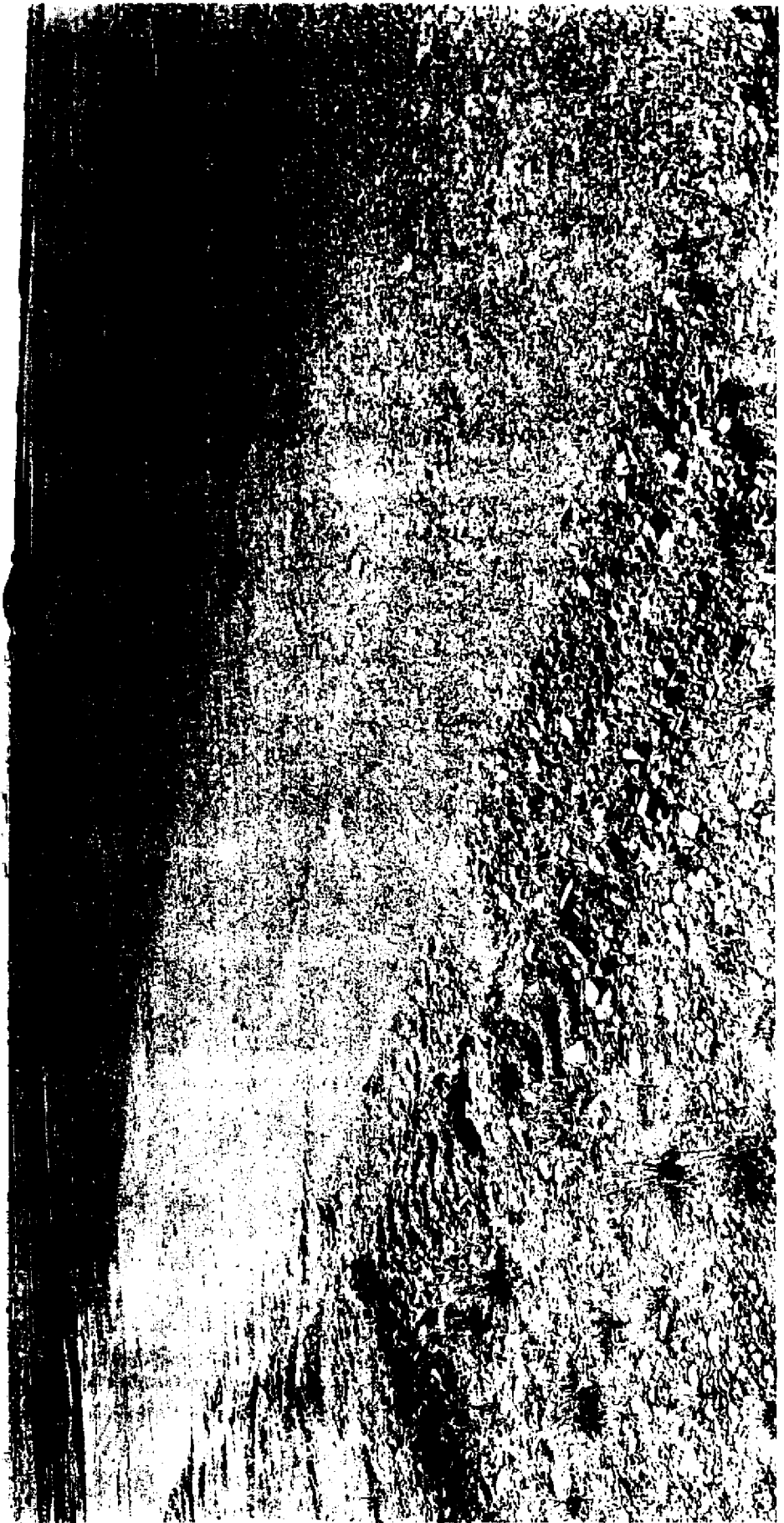


Photo h 14. WWP 1957 Cell riprap placement.

PN99-0315-1-14



PN99-0305-1-12

Photograph 15. WWP 1952 Cell first layer of pea gravel.

1. The first step in the process is to identify the areas that need to be graded. This is done by walking the site and looking for any unevenness or areas that are not level.

2. Once the areas are identified, the next step is to mark them out. This is done by using a surveying instrument to measure the height of the ground and then marking it with stakes or flags.

3. The third step is to grade the area. This is done by using a motor grader to move the soil from the high areas to the low areas, creating a smooth, level surface.

4. The final step is to finish the grade. This is done by using a roller to compact the soil and make it smooth and even.



PN99-0315-1-24

Photo 16. SLP final grade operations.



PN99-0305-1-6

Photograph 17. WWP 1957 Cell clearing and grubbing.

Appendix F

Prefinal Inspection Checklist

TEST REACTOR AREA - REMEDIAL DESIGN
PRE-FINAL CHECKLIST

<u>General Items</u>						Comments/Corrective actions
Item		Incomplete	Complete	Complies	Does Not Comply	
Field Placement Test Results Verified		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Some results have not yet been submitted as the work is still in progress. Work completed 10/30/99.
Field Quality Control Test Results Verified		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Some results have not yet been submitted as the work is still in progress. Work completed 10/30/99.
Field Records for Surveying, Layout, Laboratory, and Field Inspection Activities		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Refer to Vendor Data Submittal (VDS) Numbers 18, 40, 41, 43, 45, 46, 49, 50, 51, 52, 63, 65, 66, 67, 68, 69, 70, 71, 72, 73, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 93, 94, 95, 96, 97, 98, 99, 100, 101, 106, 108, 110, 111, 112, 113, 115, 116, 117, 118, 120 Some records have not yet been submitted as the work is still in progress.
Borrow Areas have been revegetated and left in a stable condition		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Borrow Areas have been left in a stable condition. Seeding is to be done in October. Seeding complete 11/15/1999.
Monitoring Wells USGS-53 and USGS-56 have been extended to the top of the 200 foot main interbed		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	It was determined that the wells did not need to be extended per Agency Agreement
Decontamination waste has been properly dispositioned		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	RMA has been dispositioned and removed in October 1999.
Optical survey, tape and electronic measurement used has a minimum accuracy of ± 0.1 feet in horizontal locations and ± 0.01 feet in elevations		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Refer to VDS Number 18
All existing or placed materials for all cells were surveyed to ensure they were within following tolerances:		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Refer to VDS Numbers 46, 63, 65, 68, 69, 71, 72, 85, 101, 106, 107, 113.
Description Tolerances Existing Subgrade -0.12 to +0.25 feet (elevation) Rough Grade -0.12 to +0.25 feet (subgrade elev.) Final Grade -0.08 to +0.17 feet (elevation) Fill Layer -0.17 to +0.08 feet (thickness) Topsoil Layer -0.00 to +0.17 feet (thickness) Gravel Layers -0.00 to +0.17 feet (thickness) Cobble Layer -0.00 to +0.25 feet (thickness)						

TEST REACTOR AREA - REMEDIAL DESIGN
PRE-FINAL CHECKLIST

<u>General Items</u>		Incomplete	Complete	Complies	Does Not Comply	
Item						Comments/Corrective actions
Additional Comments: Note: The Remedial Action Report will contain an appendix of the referenced pertinent vendor data submittals (VDS).						Concurrence: _____ US EPA _____ IDHW/DEQ _____ DOE-ID: _____ LIMITCO: _____ PHENIX: _____ PARSONS: _____

TEST REACTOR AREA - REMEDIAL DESIGN
PRE-FINAL CHECKLIST

Chemical Waste Pond TRA-06		ROD SELECTED REMEDY SECTION 8.1.2 RD/RA WORK PLAN SECTION 1.3.1.2				Comments/Corrective actions
Item		Incomplete	Complete	Complies	Does Not Comply	
Existing 12" VCP grouted at inlet with a Portland Type II cement having 5% bentonite at toe of native soil cover; routine operational discharges of water through piping since last release of hazardous waste to pond meets RCRA/HWMA decontamination requirements in 40 CFR 264.111 and .114 (RCRA/HWMA not an ARAR)		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Refer to construction daily logs. Results of samples where collected will be included in the Remedial Action Report.
Fences, gates and signs from CP surveyed by RCTs, decontaminated as necessary, and released for disposal in CFA landfill		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	The Chemical Waste Pond was determined to have no radiological contamination, however, spot radiological surveys were conducted with negative results.
Native Soil Fill, Type B (10 feet); fill materials used were native soils from borrow locations identified on drawings; fill materials were generally free of plant material, roots larger than 1 inch I.D., rubble, litter, insect infestation and other deleterious material.		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	The TRA-25 Borrow pile and material from the TRA Borrow Pit as identified on drawings C-01 and G-02 were used in CWP. Refer to Vendor Data Submittal (VDS) Numbers 67, 73, 82, 90, 91, 98, 106.
Maximum 10" Lifts; placed in loose lifts to attain a maximum compacted lift thickness of 10 inches		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Tractor-pulled scrapers were used to load, move and place soils. Six inch lifts were placed as this thickness was optimum for these scrapers. Refer to construction daily logs.
5 pass minimum smooth drum roller compaction		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Refer to construction daily logs.
3 Foot Layer, Native Soil Fill, Type A; fill materials used were native soils from borrow locations identified on drawings; fill materials were generally free of plant material, roots larger than 1 inch I.D., rubble, litter, insect infestation and other deleterious material		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Material was brought in from the TRA-10 Borrow Pile per the design specifications. The compaction tests met specifications; no debris was encountered. Refer to construction daily logs, and to VDS Numbers 66,84,89,90,91,94,98,106, & 110.
Placed in loose lifts to attain a maximum compacted lift thickness of 6 inches		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Tractor-pulled scrapers were used to load, move and place soils. Six inch lifts were placed as this thickness was optimum for these scrapers. Refer to construction daily logs.
Compacted with sheepfoot roller to a minimum 95% of maximum dry density as determined by ASTM D698 to ensure the permeability of the cover is less than the underlying pond bottom sediments		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Refer to VDS Numbers 84, 90, 91, & 98; refer to construction daily logs.
Rough grade adequately established		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Refer to VDS Numbers 106

TEST REACTOR AREA - REMEDIAL DESIGN
PRE-FINAL CHECKLIST

Chemical Waste Pond TRA-06		<input type="checkbox"/> Incomplete <input checked="" type="checkbox"/> Complete <input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply	ROD SELECTED REMEDY SECTION 8.1.2 RD/RA WORK PLAN SECTION 1.3.1.2
Item			Comments/Corrective actions
12 inch Topsoil Layer: topsoils used were native soils (Type A) from borrow locations identified on drawings; topsoils were generally free of plant material, roots larger than 1 inch I.D., rubble, litter, insect infestation and other deleterious material; topsoil placed in maximum 8-inch loose lifts; topsoil placement occurred with minimal compaction obtained only from the normal passage of construction equipment during placement and grading operations	<input type="checkbox"/> Incomplete <input checked="" type="checkbox"/> Complete <input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply	<input type="checkbox"/> Incomplete <input checked="" type="checkbox"/> Complete <input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply	Refer to VDS Numbers 66, 89, 94, 106 & 110; refer to construction daily logs.
Drainage courses established to direct surface water away from disposed wastes	<input type="checkbox"/> Incomplete <input checked="" type="checkbox"/> Complete <input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply	<input type="checkbox"/> Incomplete <input checked="" type="checkbox"/> Complete <input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply	Refer to VDS Numbers 101 & 106. Note: Drawings with actual as-built slopes will be included in the Remedial Action Report.
Final Grade, Min 0.5%, 6:1 Shoulders	<input type="checkbox"/> Incomplete <input checked="" type="checkbox"/> Complete <input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply	<input type="checkbox"/> Incomplete <input checked="" type="checkbox"/> Complete <input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply	To be completed in October. Revegetation completed by 11/15/1999.
Vegetation Established; seed furnished in sealed bags or containers clearly labeled to show name and address of supplier, seed name, lot number, net weight, origin, percentage of weed seed content, guaranteed percentage of purity and germination, pounds of live seed of each seed species, total pounds of pure live seed in container, and date of last germination test (within 6 months prior to commencement of planting operations; seed was from current or previous years' crop; ; starter fertilizer containing nitrogen, phosphorous, potassium and sulfur (20-48-10) used and applied at rate of 30 pounds per acre; grain straw (wheat, oats or barley) mulch (clean, free of seed and free of noxious weeds) applied on reclaimed areas at rate of 2 tons per acre; seeding of grass species done with rangeland grass drill equipped with multiple seed bins, depth bands, and press wheels; seed placed at depth not to exceed ½ inch; seeding done between September 1 and October 15;	<input type="checkbox"/> Incomplete <input checked="" type="checkbox"/> Complete <input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply	<input type="checkbox"/> Incomplete <input checked="" type="checkbox"/> Complete <input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply	

TEST REACTOR AREA - REMEDIAL DESIGN
PRE-FINAL CHECKLIST

Chemical Waste Pond TRA-06		Complete	Does Not Comply	Comments/Corrective actions	ROD SELECTED REMEDY SECTION 8.1.2 RD/RA WORK PLAN SECTION 1.3.1.2
Item		Complete	Does Not Comply		
the following seed mixture used:					
Species	(lb/acre pure live seed)				
'Critana' Thickspike wheatgrass	5.5	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
'Secar' Bluebunch wheatgrass	5.5	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Wyoming big sagebrush	0.5	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Green rabbitbrush	0.5	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Concrete decontamination pad and associated sump, located east of the SE corner of the CP, removed as a best management practice; HW determination prepared and decon pad dispositioned appropriately		<input type="checkbox"/>	<input type="checkbox"/>		It needs to be noted that this decon pad is not a CERCLA Site; however, the decon pad is being utilized as a CERCLA TAA and the sump has been removed as a Best Management Practice.
Warning Signs Placed		<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Brass corner markers to be installed at each corner of CP.		<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Adjacent ground (near sump and CP) restored		<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Additional Comments: Note: The Remedial Action Report will contain an appendix of the referenced pertinent vendor data submittals (VDS).				Concurrence: US EPA _____ IDHW/DEQ _____ DOE-ID: _____ LMITCO: _____ PHENIX: _____ PARSONS: _____ DATE _____	

TEST REACTOR AREA - REMEDIAL DESIGN
PRE-FINAL CHECKLIST

Cold Waste Pond TRA-08		Incomplete	Complete	Complies	Does Not Comply	ROD SELECTED REMEDY SECTION 8.1.3 RD/RA WORK PLAN SECTION 1.3.1.3
Item		Incomplete	Complete	Complies	Does Not Comply	Comments/Corrective actions
Contaminated soil exceeding FRGs (Cs-137, 11.7 pCi/g; As, 18.3 mg/kg) excavated and placed in WWP Cell 1957		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	See construction daily logs. Approximately a 6 inch depth was excavated.
Confirmatory sampling performed to verify FRGs met		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	See construction daily logs/sample log book.
Areas excavated to depths greater than 2 feet backfilled with coarse-grained soil from the CFA pit; otherwise, the pond bottom graded smooth and placed back into service.		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	See construction daily logs. No backfilling was required per the facility operator.
Additional Comments: Biased sampling of the highest count areas of the south Cold Waste Pond has been completed. Preliminary results indicate no contamination is present above action levels.		Concurrence: _____ DATE _____ US EPA _____ IDHW/DEQ _____ DOE-ID: _____ LIMITCO: _____ PHENIX: _____ PARSONS: _____				

TEST REACTOR AREA - REMEDIAL DESIGN
PRE-FINAL CHECKLIST

Sewage Leach Pond TRA-13		ROD SELECTED REMEDY SECTION 8.1.3 RD/RA WORK PLAN SECTION 1.3.1.3				Comments/Corrective actions
Item		Incomplete	Complete	Complies	Does Not Comply	
Existing 8" Vitrified Clay Pipes (VCPs) and MH plugged with concrete and abandoned; inlet piping abandoned in-place by caving in and grouting the manhole located NW of pond to 2 feet BLS, with a Portland Type II cement having 5% bentonite, and covering with 2 feet of clean fill		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Refer to construction daily logs and to Vendor Data Submittal (VDS) Numbers 49, 50, 51, 70, 85, 88 & 100.
Monitoring well SB-09 abandoned by cutting well casing at ground surface and filling entire casing with a Portland Type II cement having 5% bentonite		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Work was completed by LIMITCO construction forces prior to the beginning of the sub-contract work.
Fences, gates and signs from SLP surveyed by RCTs, decontaminated as necessary, and released for disposal in CFA landfill		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	All items were clean; all were either reused or recycled. Nothing was sent to the CFA Landfill.
Existing SLP berms removed and contaminated berm material placed at bottom of SLP; 200 yd3 of TRA STP sludge placed in pond bottom		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No sludge from the STP was placed into the ponds. Adequate notification was given, but no sludge material was delivered. All other contaminated soil material was place below elevation 4913 per design drawings. See construction daily logs and VDS Number 63.
Native Soil Fill, Type C2		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	See construction daily logs
10 Foot Min. Cover over C2 Soils		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Tractor-pulled scrapers were used to load, move and place soils. Six inch lifts were placed as this thickness was optimum for these scrapers. Refer to construction daily logs.
Maximum 10" Lifts		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	See construction daily logs
5 Pass Drum Roller Compaction		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	See construction daily logs
Native soil fill, Type B/C1 (3 feet); fill materials used were native soils from borrow locations identified on drawings; fill materials were generally free of plant material, roots larger than 1 inch I.D., rubble, litter, insect infestation and other deleterious material		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Borrow area TRA-26 was used. See construction daily logs and VDS Numbers 67, 73, 82.
Placed in loose lifts to attain a maximum compacted lift thickness of 10 inches		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Tractor-pulled scrapers were used to load, move and place soils. Six inch lifts were placed as this thickness was optimum for these scrapers. Refer to construction daily logs.
5 pass minimum smooth drum roller compaction		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See construction daily logs

TEST REACTOR AREA - REMEDIAL DESIGN

PRE-FINAL CHECKLIST

Sewage Leach Pond TRA-13		ROD SELECTED REMEDY SECTION 8.1.3 RD/RA WORK PLAN SECTION 1.3.1.3				Comments/Corrective actions
Item		Incomplete	Complete	Complies	Does Not Comply	
Native Soil Fill, Type B; fill materials used were native soils from borrow locations identified on drawing; fill materials were generally free of plant material, roots larger than 1 inch I.D., rubble, litter, insect infestation and other deleterious material.		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	See construction daily logs and VDS Numbers 67, 73 & 82.
12 inch Topsoil Layer; topsoils used were native soils from borrow locations identified on drawings; topsoils were generally free of plant material, roots larger than 1 inch I.D., rubble, litter, insect infestation and other deleterious material; Topsoil placement occurred with minimal compaction obtained only from the normal passage of construction equipment during placement and grading operations		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	An additional 6 inches of top soil was placed over the soil contamination area and the cells. See construction daily logs and VDS Numbers 66, 89, 94 & 110.
Topsoil placed in maximum 8-inch loose lifts		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Tractor-pulled scrapers were used to load, move and place soils. Six inch lifts (or less) were placed as this thickness was optimum for these scrapers. Refer to construction daily logs.
Rough grade adequately established		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	See VDS Number 63.
Final Grade, Min 0.5%, 6:1 Shoulders		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	See VDS Numbers 69 & 71.
Drainage courses established to direct surface water away from disposed wastes.		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	See VDS Numbers 69 & 71.
Vegetation Established; seed furnished in sealed bags or containers clearly labeled to show name and address of supplier, seed name, lot number, net weight, origin, percentage of weed seed content, guaranteed percentage of purity and germination, pounds of live seed of each seed species, total pounds of pure live seed in container, and date of last germination test (within 6 months prior to commencement of planting operations; seed is from current or previous years' crop; starter fertilizer containing nitrogen, phosphorous, potassium and sulfur (20-48-10) used and applied at rate of 30 pounds per acre; grain straw (wheat, oats or barley) mulch (clean, free of seed and free of noxious weeds) applied on reclaimed areas at rate of 2 tons per acre		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	To be completed in October. Completed 11/15/1999.

TEST REACTOR AREA - REMEDIAL DESIGN
PRE-FINAL CHECKLIST

<u>Sewage Leach Pond</u> TRA-13		ROD SELECTED REMEDY SECTION 8.1.3 RD/RA WORK PLAN SECTION 1.3.1.3	
Item	<input type="checkbox"/> Incomplete <input checked="" type="checkbox"/> Complete <input type="checkbox"/> Complies <input type="checkbox"/> Does Not Comply	Comments/Corrective actions	
seeding of grass species done with rangeland grass drill equipped with multiple seed bins, depth bands, and press wheels; seed placed at depth not to exceed ½ inch; seeding done between September 1 and October 15; following seed mixture used: Species (lb/acre pure live seed) 'Critana' Thickspike wheatgrass 5.5 'Secar' Bluebunch wheatgrass 5.5 Wyoming big sagebrush 0.5 Green rabbitbrush 0.5			
Permanent Markers Placed		<input type="checkbox"/>	See VDS Numbers 83 & 115 for permanent marker test results.

TEST REACTOR AREA - REMEDIAL DESIGN
PRE-FINAL CHECKLIST

<u>Sewage Leach Pond</u> TRA-13		Incomplete		Complete	Complies	Does Not Comply	ROD SELECTED REMEDY SECTION 8.1.3 RD/RA WORK PLAN SECTION 1.3.1.3
Item		Complete		Complies	Comments/Corrective actions		
Laydown Areas and Adjacent ground restored		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Type C warning signs placed; brass corner markers placed at 5 locations around perimeter of berm and SCA		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Additional Comments: Note: The Remedial Action Report will contain an appendix of the referenced pertinent vendor data submittals (VDS).							Concurrence: US EPA _____ IDHW/DEQ _____ DOE-ID: _____ LIMITCO: _____ PHENIX: _____ PARSONS: _____ DATE _____

TEST REACTOR AREA - REMEDIAL DESIGN
PRE-FINAL CHECKLIST

Warm Waste Ponds (1952, 1957) TRA-03		ROD SELECTED REMEDY SECTION 8.1.1 RD/RA WORK PLAN SECTION 1.3.1.1		
Item				Comments/Corrective actions
	Incomplete	Complete	Complies	Does Not Comply
Three inlet pipes cut and grouted to edge of engineered cover	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Surface casings of existing monitoring wells TRA-A72, TRA-A74 and TRA-A78 extended prior to installation of engineered cover	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Three monitoring wells abandoned (SB-06, GW-1 and GW-2) by cutting well casing at ground surface and filling entire casing with a Portland Type II cement having 5% bentonite	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Native Soil Fill, Type A to subgrade, fill materials used were native soils from borrow locations identified on drawings and were generally free of plant material, roots larger than 1 inch I.D., rubble, litter, insect infestation and other deleterious material.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Placed in loose lifts to attain a maximum compacted lift thickness of 6 inches	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Compacted with sheepfoot roller to a minimum 95% of maximum dry density as determined by ASTM D698	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rough grade adequately established	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

TEST REACTOR AREA - REMEDIAL DESIGN
PRE-FINAL CHECKLIST

Warm Waste Ponds (1952, 1957) TRA-03		ROD SELECTED REMEDY SECTION 8.1.1 RD/RA WORK PLAN SECTION 1.3.1.1													
Item		Does Not Comply	Complete	Complies	Comments/Corrective actions										
<p>4" gravel layer, gravel obtained from on-site source identified on drawings, and was a mixture of clean coarse sands and fine gravel with following gradation (determined in accordance with ASTM D422)</p> <table border="1"> <thead> <tr> <th>Nominal Square Opening Sieve Size</th> <th>Percent Passing</th> </tr> </thead> <tbody> <tr> <td>3/4-inch</td> <td>95-100</td> </tr> <tr> <td>1/2-inch</td> <td>70-95</td> </tr> <tr> <td>3/8-inch</td> <td>25-50</td> </tr> <tr> <td>No. 4</td> <td>0-15</td> </tr> </tbody> </table>		Nominal Square Opening Sieve Size	Percent Passing	3/4-inch	95-100	1/2-inch	70-95	3/8-inch	25-50	No. 4	0-15	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Refer to construction daily logs and to VDS Numbers 68, 86 & 87.
Nominal Square Opening Sieve Size	Percent Passing														
3/4-inch	95-100														
1/2-inch	70-95														
3/8-inch	25-50														
No. 4	0-15														
<p>4 pass smooth drum roller compaction with a minimum 20,000 lbs operating weight</p>		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Refer to daily construction logs. The roller utilized was an Ingersoll-Rand DD-110 Vibratory Compactor with an operating weight of 25,060 lbs.										
<p>12" Cobble layer cobble material obtained from an off-site location, placed in one or more lifts to attain final layer thickness with following gradation (determined by ASTM C136):</p> <table border="1"> <thead> <tr> <th>Nominal Square Opening Sieve Size</th> <th>Percent Passing</th> </tr> </thead> <tbody> <tr> <td>8 inches</td> <td>95-100</td> </tr> <tr> <td>6 inches</td> <td>75-95</td> </tr> <tr> <td>4 inches</td> <td>5-55</td> </tr> <tr> <td>2 inches</td> <td>< 5"</td> </tr> </tbody> </table>		Nominal Square Opening Sieve Size	Percent Passing	8 inches	95-100	6 inches	75-95	4 inches	5-55	2 inches	< 5"	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See VDS Numbers 116, 117, 118 & 120 for test results to date.
Nominal Square Opening Sieve Size	Percent Passing														
8 inches	95-100														
6 inches	75-95														
4 inches	5-55														
2 inches	< 5"														

TEST REACTOR AREA - REMEDIAL DESIGN
PRE-FINAL CHECKLIST

Warm Waste Ponds (1952, 1957) TRA-03		Does Not Comply		ROD SELECTED REMEDY SECTION 8.1.1 RD/RA WORK PLAN SECTION 1.3.1.1											
Item		Complete	Complies	Comments/Corrective actions											
6" Gravel layer gravel obtained from on-site source identified on drawings and was a mixture of clean coarse sands and fine gravel with following gradation (determined in accordance with ASTM D422): <table border="0"> <tr> <td>Nominal Square Opening Sieve Size</td> <td>Percent Passing</td> </tr> <tr> <td>3/4-inch</td> <td>95-100</td> </tr> <tr> <td>1/2-inch</td> <td>70-95</td> </tr> <tr> <td>3/8-inch</td> <td>25-50</td> </tr> <tr> <td>No. 4</td> <td>0-15</td> </tr> </table>		Nominal Square Opening Sieve Size	Percent Passing	3/4-inch	95-100	1/2-inch	70-95	3/8-inch	25-50	No. 4	0-15	<input type="checkbox"/>	<input type="checkbox"/>	See VDS Numbers 86 & 87 for test results to date.	
Nominal Square Opening Sieve Size	Percent Passing														
3/4-inch	95-100														
1/2-inch	70-95														
3/8-inch	25-50														
No. 4	0-15														
4 pass smooth drum roller compaction with a minimum 20,000 lbs operating weight		<input type="checkbox"/>	<input type="checkbox"/>	Refer to daily construction logs. The roller utilized was an Ingersoll-Rand DD-110 Vibratory Compactor with an operating weight of 25,060 lbs.											
Final Grade, Min 0.5%, 4:1 Shoulders		<input type="checkbox"/>	<input type="checkbox"/>												

TEST REACTOR AREA - REMEDIAL DESIGN
PRE-FINAL CHECKLIST

Warm Waste Ponds (1952, 1957) TRA-03		ROD SELECTED REMEDY SECTION 8.1.1 RD/RA WORK PLAN SECTION 1.3.1.1			
Item	Comments/Corrective actions				
	Incomplete <input type="checkbox"/>	Complete <input checked="" type="checkbox"/>	Complies <input type="checkbox"/>	Does Not Comply <input type="checkbox"/>	
Rip Rap placed; most basaltic rip rap materials obtained from Rip Rap Borrow Area TRA-29, percentage of material smaller than 4" nominal diameter was less than 20 percent (visual estimate); rip rap placed in one continuous layer with no nominal thickness; proportions by size were approximately: Percent Size (Ave. Diameter) 30 > 24" 30 12" << 24" 30 2" << 12" 10 < 2"	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4:1 Barrier Transition Between 1957 Cell and 1964 Cell; final continuous rip rap layer placed over all three cells	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Drainage courses established to direct surface water away from engineered cover	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Brass corner markers and four permanent markers placed around WWPs (one located on N, S, E and W side); permanent markers constructed of granite with a minimum compressive strength of 20,000 psi as determined by ASTM C170; each permanent marker consists of one homogenous mass and is free of significant fracture faces; granite markers bonded to foundations with high strength, high flow, epoxy grout such as Ceilcoat 648 CP Plus	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Laydown and Adjacent Areas restored, vegetation established	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
				See VDS Numbers 83 & 115 for test results.	
				Completed in October 1999.	

TEST REACTOR AREA - REMEDIAL DESIGN
PRE-FINAL CHECKLIST

<u>Warm Waste Ponds (1952, 1957)</u> TRA-03		Incomplete <input type="checkbox"/>		Complete <input checked="" type="checkbox"/>	Complies <input type="checkbox"/>	Does Not Comply <input type="checkbox"/>	ROD SELECTED REMEDY SECTION 8.1.1 RD/RA WORK PLAN SECTION 1.3.1.1
Item		Comments/Corrective actions					
Warning Signs Placed; fences, gates and signs from the WWP Cell 1957 surveyed by RCTs, decontaminated as necessary, and released for disposal in CFA landfill.							
Additional Comments: Note: The Remedial Action Report will contain an appendix of the referenced pertinent vendor data submittals (VDS).		Concurrence: <u>DATE</u> US EPA _____ IDHW/DEQ _____ DOE-ID: _____ LMTCO: _____ PHENIX: _____ PARSONS: _____					

TEST REACTOR AREA - REMEDIAL DESIGN
PRE-FINAL CHECKLIST

Warm Waste Pond (1964 Cell) TRA-03		ROD SELECTED REMEDY SECTION 8.1.1 RD/RA WORK PLAN SECTION 1.3.1.1			
Item	Incomplete	Complete	Complies	Does Not Comply	Comments/Corrective actions
Native Soil Fill, Type B; fill materials used were native soils from borrow locations identified on drawings, and were generally free of plant material, roots larger than 1 inch I.D., rubble, litter, insect infestation and other deleterious material	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Refer to construction daily logs and to Vendor Data Submittal (VDS) Number 67.
Placed in loose lifts to attain a maximum compacted lift thickness of 10 inches	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Tractor-pulled scrapers were used to load, move and place soils. Six inch lifts were placed as this thickness was optimum for these scrapers. Refer to construction daily logs.
5 pass minimum smooth drum roller compaction	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See construction daily logs
Rough grade adequately established	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Refer to VDS Numbers 69 & 72.
Rip Rap placed; most basaltic rip rap materials obtained from Rip Rap Borrow Area TRA-29; percentage of material smaller than 4" nominal diameter was less than 20 percent (visual estimate); placed in one continuous layer with no nominal thickness; proportions by size were approximately:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	See construction daily logs
Percent Size (Ave. Diameter)					
30 > 24"					
30 12" < 24"					
30 2" < 12"					
10 < 2"					
Drainage Courses Established to direct surface water away from engineered cover	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Refer to VDS Numbers 69 & 72.
Brass corner markers and four permanent markers placed around WWPs (one located on N, S, E and W side); permanent markers constructed of granite with a minimum compressive strength of 20,000 psi as determined by ASTM C-170; each permanent marker consists of one homogenous mass and is free of significant fracture faces; granite markers bonded to foundations with high strength, high flow, epoxy grout such as Ceilcoat 648 CP Plus	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	See VDS Numbers 83 & 115 for test results.

TEST REACTOR AREA - REMEDIAL DESIGN
PRE-FINAL CHECKLIST

<u>Warm Waste Pond (1964 Cell)</u> TRA-03		Incomplete		Complete	Complies	Does Not Comply	ROD SELECTED REMEDY SECTION 8.1.1 RD/RA WORK PLAN SECTION 1.3.1.1
Item							Comments/Corrective actions
Laydown Areas and Adjacent ground restored, vegetation established		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	To be completed in October. Completed 11/15/1999
Warning Signs Placed		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Additional Comments: Note: The Remedial Action Report will contain an appendix of the referenced pertinent vendor data submittals (VDS).							Concurrence: <u>DATE</u> US EPA _____ IDHW/DEQ _____ DOE-ID: _____ LIMITCO: _____ PHENIX: _____ PARSONS: _____

TEST REACTOR AREA - REMEDIAL DESIGN
PRE-FINAL CHECKLIST

<u>Institutional Controls for OU 2-13</u>				
Item	Incomplete	Complete	Complies	Does Not Comply
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
O&M Plan Modified	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Physical Institutional Controls In Place	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Additional Comments: O&M Plan will be revised to include revised Institutional Control Plan that will explain institutional control requirements for OU 2-13 sites.				
Comments/Corrective actions Plan submitted 3/16/2000 Signs and Permanent markers are in place. Complete 10/30/1999				
Concurrence: US EPA _____ IDHW/DEQ _____ DOE-ID: _____ LIMITCO: _____ PHENIX: _____ PARSONS: _____ DATE _____				

Appendix G

INEEL Form 669 “Diesel Fuel Spill”

FAX TRANSMITTAL

Date: 5/12/99

To: Joseph Landis

Company: ✓/Parsons

Phone: Mobile 521-2323

FAX# 6-4350

From: L. H. Shepherd

Company: LIMITCO

Phone: (208) 526-8019

FAX# (208) 526-8007

Number of pages (including this cover sheet) 10

Subject: Copy of WID# 1374 Update #8A#9 "Petroleum Spill Materials"
which includes your 4 x 55 gel drum Diesel Spill (2nd Bullet
item on the 1 page attachment)



MATERIAL AND WASTE CHARACTERIZATION GENERATOR'S CERTIFICATION AND INFORMATION



Form 869 (IWTS electronic version 2.0)

1374: Petroleum Spill Materials (1762)

Receiving Organization Use Only

APPROVED



Shepherd
10-May-99

System Defined Unique Profile ID: 1762 N

Characterization ID No.: 1374

Date Assigned: 18-Mar-99

Profile Name: Petroleum Spill Materials

INEL Waste Stream ID:

Generating Unit: CFA: Central Facilities Area

Material or Waste Type and Action: Industrial Waste: Conditional to be Disposed at INEEL Landfill

Profile Approved by: L. H. Shepherd

Date: 10-May-99

Profile Status

Record Status

- ☒ Active
☐ Inactive (user and date):
☐ Canceled

Lock Status

- ☒ Locked (user and date): SatoS 18-Mar-99
☐ Unlocked

A. Generators Certification

CERTIFIED



SatoS
06-May-99

I certify that the information on this form 869 and attachments is true and accurate. I have put forth a good faith effort to acquire and verify the information used to complete this characterization. Willful and deliberate omissions have not been made. All known and suspected hazards have to the best of my knowledge been disclosed.

Certifier's Name: Bob Lopez

Title: WERF Shift Supervisor

Date: 06-May-99

Phone: (208) 526-8008

Mail Stop: 8104

Facsimile No: (208) 526-8405

E-Mail: rlz@inel.gov

Generating Facility: CFA: Central Facilities Area

Generating Unit (Building or Process): CFA: Central Facilities Area

B. General Information

1. ☒ Yes ☐ No Will material and waste characterization be fully capable of complying with applicable RRWAC subsection?
If "No", receiving organization approval and completion of the following is required:

a. INEL-RRWAC requirement(s) not met (list each):

b. Receiving organization approval letter number for nonstandard material or waste:

Contact	Name	E. Mail ID	Phone	Pager	Mail Stop
2. Generator	Bob Lopez	rlz@inel.gov	(208) 526-8008	6403	8104
3. Technical	Stu Sato	SAT	(208) 526-4403	6624	4142

Charge Number: D36100400

4. Material or waste type and action: Industrial Waste: Conditional to be Disposed at INEEL Landfill

5. Profile Name (Common Name of Material): Petroleum Spill Materials

6. Generating Status: ☐ One time only
☒ On-going

7. Generating process description:

Waste is spill materials contaminated with petroleum products used during clean up of various petroleum spills.

Packaging Description: _____ Empty Pkg. Weight: _____ lb.

Physical state at 70 degrees F (solid, liquid, sludge, gel, etc.): solid

10. ☐ Yes ☒ No Does the material contain free liquids?

11. ☒ Yes ☐ No Current waste minimization plan? Reference: _____



MATERIAL AND WASTE CHARACTERIZATION GENERATOR'S CERTIFICATION AND INFORMATION



Idaho National Engineering Laboratory

Form 669 (INWTS electronic version 2.0)

1374: Petroleum Spill Materials (1762, N)

B. General Information

12. Indicate all that apply:

- | | | | | |
|---|--|---|--|--|
| <input type="checkbox"/> CERCLA | <input type="checkbox"/> Scrap Metal | <input type="checkbox"/> OSHA carcinogen | <input type="checkbox"/> PCB >= 50 ppm | <input type="checkbox"/> Etiologic Agent |
| <input type="checkbox"/> Nonfriable asbestos | <input type="checkbox"/> RIFRA | <input type="checkbox"/> Unused material | <input checked="" type="checkbox"/> Used oil | <input type="checkbox"/> Aerosol cans |
| <input type="checkbox"/> Compressed gas cylinders | <input type="checkbox"/> Friable asbestos | <input checked="" type="checkbox"/> Soil | <input checked="" type="checkbox"/> Debris | <input type="checkbox"/> Spill cleanup |
| <input type="checkbox"/> Wastewater | <input type="checkbox"/> Classified material | <input type="checkbox"/> Accountable nuclear material | <input type="checkbox"/> > 100 PPM VOCs | |

13. ☐ Yes ☒ No Is this DOT regulated hazardous material? If yes, identify DOT primary hazard: _____
and DOT subsidiary hazard(s): _____

14. ☐ Yes ☒ No At the point of generation did this material contain any RCRA "F", "K", "U", or "P" Listed waste either in pure form, as a mixture, or as a treatment residue (i.e., ash, leachate, spill cleanup), or "D" Characteristic waste? If yes, give applicable EPA:

Source Code: _____

Form Code: _____

and EPA Hazardous Waste Numbers (40 CFR 261):

15. ☒ Yes ☐ No Is Section C1, Physical Characteristics of Material, required by the GI?

16. ☒ Yes ☐ No Is Section C2, Chemical Characteristics of Material, required by the GI?

17. ☐ Yes ☒ No Is Section C3, Radiological Characteristics of Material, required by the GI? If yes, complete section per GI instructions.

18. ☐ Yes ☒ No Is this a lab pack? If yes, complete the Lab Pack Inventory List on the "Container Profile".

19. ☒ Yes ☐ No Does the GI require any additional information? If yes, see instructions.

20. ☒ Yes ☐ No Is supporting documentation submitted? If yes, list: MSDS, WDDF (435.39)

Generation Estimates - Active

Estimate Date	Start Year	Int. Yrs.	Volume		Mass		Data Entry By		Inactivated By	
			Quan.	Units	Quan.	Units	User ID	Date	User ID	Date
3/16/99	1999	1	500	FT3			Sato3	3/16/99		



MATERIAL AND WASTE CHARACTERIZATION GENERATOR'S CERTIFICATION AND INFORMATION



Form 669 (WTS electronic version 2.0)

1374: Petroleum Spill Materials (1762, N)

C. Characteristics of Material

1. Physical Characteristics of Material

a. General characteristics (number from top to bottom, for nonlayered No. 1 is 100%):

Layer No.	Physical State at 70 degrees F	Range of Percentage of Total			Color (as required by GI)
1.	solid	1	to	40 vol%	brown/gray/black
2.	solid	1	to	60 vol%	white/brown/gray

b. ☐ Yes ☒ No Is density required? If yes, give density range of representative sample.

Liquid: _____ to _____ g/ml Solid: _____ to _____ g/cc

c. ☐ Yes ☒ No Is this aqueous waste to be processed in the PWTU? If yes, give total solids range for representative

Sample: _____ to _____ mg/L

d. ☐ Yes ☒ No Is this WERF incinerable liquid? If yes, give viscosity range: _____ to _____ SSU

2. Chemical Characteristics of Material:

a. Does the material contain any of the following? For each item (1) - (15) checked yes, must include corresponding quantitative information in C2b, with the corresponding number (1) - (15) from this list.

Yes No

- ☐ ☒ (1) Organic free liquid
- ☐ ☒ (2) Aqueous free liquid
- ☒ ☐ (3) Absorbents
- ☐ ☒ (4) Chelating agents
- ☐ ☒ (5) Aqueous liquid with reactive cyanide ≥ 250 ppm
- ☐ ☒ (6) Aqueous liquid with reactive sulfide ≥ 500 ppm
- ☐ ☒ (7) Air reactives
- ☐ ☒ (8) Water reactives
- ☐ ☒ (9) Other reactives
- ☐ ☒ (10) Fuming acids or acid gases
- ☐ ☒ (11) Shock sensitive constituents
- ☐ ☒ (12) Explosives
- ☐ ☒ (13) Pyrophorics
- ☐ ☒ (14) Petroleum products
- ☐ ☒ (15) Oxidizers
- ☐ ☒ Benzene
- ☐ ☒ PCBs ≥ 25 ppm
- ☐ ☒ PCBs ≥ 5 ppm
- ☐ ☒ PCB liquids
- ☐ ☒ PCB capacitors/ballasts
- ☐ ☒ PCB transformers/regulators
- ☐ ☒ PCB liquid contaminated debris or derived from a spill of PCB liquid

Yes No

For liquid waste only

- ☐ ☒ Nickel and/or its compounds (as Ni) ≥ 134 mg/L
- ☐ ☒ Thallium and/or its compounds (as Tl) ≥ 103 mg/L
- ☐ ☒ Halogenated organic compounds ≥ 1000 mg/L as listed in 40 CFR 268, Appendix III

For solid waste only

- ☐ ☒ Halogenated organic compounds ≥ 1000 mg/L as listed in 40 CFR 268, Appendix III

For used oil only

- ☐ ☒ Arsenic ≥ 5 ppm
- ☐ ☒ Cadmium ≥ 2 ppm
- ☐ ☒ Chromium ≥ 10 ppm
- ☐ ☒ Lead ≥ 100 ppm
- ☐ ☒ PCBs ≥ 2 ppm
- ☐ ☒ Total halogens $\geq 4,000$ ppm
- ☐ ☒ Total halogens $\geq 1,000$ ppm

WERF incinerable wastes only

- ☐ ☒ Chlorine in any form
- ☐ ☒ Bromine in any form
- ☐ ☒ Iodine in any form
- ☐ ☒ Fluorine in any form
- ☐ ☒ Sulfur in any form
- ☐ ☒ PCBs ≥ 2 ppm

For fluid to be process in the PWTU only

- ☐ ☒ Oil and grease ≥ 10 mg/L



MATERIAL AND WASTE CHARACTERIZATION GENERATOR'S CERTIFICATION AND INFORMATION



Interim Waste Tracking System

Form 669 (IWTS electronic version 2.0)

1374: Petroleum Spill Materials (1762, N)

C. Characteristics of Material

2. Chemical Characteristics of Material (continued)

b. Composition (as required by Gf):

Note: For all items checked in 2.a, enter the common name as indicated and quantitative data as required. Also, for checked items 1-15 in 2.a, enter the corresponding number next to the common name.

Name of Material or Chemical	Char No. (see 2.a)	OSHA Carcinogen?	FIFRA Regulated?	Composition Range		
Spill Material contaminated with Petroleum Pro	()	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	1	to	60 vol%
Used Petroleum Products	()	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	1	to	40 vol%

c. ☐ Yes ☒ No Is flash point required? If yes, complete the following:

Flash point is: _____ to _____ Method used: _____
(Specify Other): _____

d. Information for WERF Incinerable waste only

(1) Heat of combustion _____ to _____ BTU/lb (2) Ash content _____ to _____ wt%
(3) Total halogen content _____ to _____ ppm (4) Water content _____ to _____ wt%
(5) Suspended particulates content _____ to _____ ppm

e. ☐ Yes ☒ No Is Total Metals analysis required? If yes, enter data below, as applicable.

Metal	Known or Expected?	Expected Composition Range	Representative Sample Analysis	Detection Limit	Units
Antimony (Sb)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	_____ to _____	_____ to _____	_____	_____
Arsenic (As)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	_____ to _____	_____ to _____	_____	_____
Barium (Ba)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	_____ to _____	_____ to _____	_____	_____
Beryllium (Be)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	_____ to _____	_____ to _____	_____	_____
Cadmium (Cd)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	_____ to _____	_____ to _____	_____	_____
Chromium (Cr)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	_____ to _____	_____ to _____	_____	_____
Cobalt (Co)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	_____ to _____	_____ to _____	_____	_____
Copper (Cu)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	_____ to _____	_____ to _____	_____	_____
Lead (Pb)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	_____ to _____	_____ to _____	_____	_____
Manganese (Mn)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	_____ to _____	_____ to _____	_____	_____
Mercury (Hg)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	_____ to _____	_____ to _____	_____	_____
Molybdenum (Mo)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	_____ to _____	_____ to _____	_____	_____
Nickel (Ni)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	_____ to _____	_____ to _____	_____	_____
Potassium (K)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	_____ to _____	_____ to _____	_____	_____
Selenium (Se)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	_____ to _____	_____ to _____	_____	_____
Silver (Ag)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	_____ to _____	_____ to _____	_____	_____
Sodium (Na)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	_____ to _____	_____ to _____	_____	_____
Thallium (Tl)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	_____ to _____	_____ to _____	_____	_____
Vanadium (V)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	_____ to _____	_____ to _____	_____	_____
Zinc (Zn)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	_____ to _____	_____ to _____	_____	_____



MATERIAL AND WASTE CHARACTERIZATION GENERATOR'S CERTIFICATION AND INFORMATION



Form 669 (IWTS electronic version 2.0)

1374: Petroleum Spill Materials (1762, N)

C. Characteristics of Material:

2.f ☐ Yes ☒ No Is RCRA Waste Analysis Required (e.g. TCLP data)?

☐ Yes ☐ No Were the sampling and analysis protocols used in full compliance with SW-846 protocol or other equivalent regulatory agency approved methods?

2.g RCRA Hazardous Constituents (Concentration Based D004- D043)

EPA CODE	Hazardous Constituent	Exp. 7 (Y, N)	TCLP Values	Type	Expected Composition Range			Representative Sample			Detection Limit	
					From	To	Units	From	To	Units	Limit	Units
TCLP Metals:												
D004	Arsenic	<input type="checkbox"/> <input checked="" type="checkbox"/>										
D005	Barium	<input type="checkbox"/> <input checked="" type="checkbox"/>										
D006	Cadmium	<input type="checkbox"/> <input checked="" type="checkbox"/>										
D007	Chromium	<input type="checkbox"/> <input checked="" type="checkbox"/>										
D008	Lead	<input type="checkbox"/> <input checked="" type="checkbox"/>										
D009	Mercury	<input type="checkbox"/> <input checked="" type="checkbox"/>										
D010	Selenium	<input type="checkbox"/> <input checked="" type="checkbox"/>										
D011	Silver	<input type="checkbox"/> <input checked="" type="checkbox"/>										
Volatiles:												
D018	Benzene	<input type="checkbox"/> <input checked="" type="checkbox"/>										
D019	Carbon tetrachloride	<input type="checkbox"/> <input checked="" type="checkbox"/>										
D021	Chlorobenzene	<input type="checkbox"/> <input checked="" type="checkbox"/>										
D022	Chloroform	<input type="checkbox"/> <input checked="" type="checkbox"/>										
D027	p-Dichlorobenzene (1,4-Dichl	<input type="checkbox"/> <input checked="" type="checkbox"/>										
D028	1,2-Dichloroethane	<input type="checkbox"/> <input checked="" type="checkbox"/>										
D029	1,1-Dichloroethylene	<input type="checkbox"/> <input checked="" type="checkbox"/>										
D035	Methyl ethyl ketone	<input type="checkbox"/> <input checked="" type="checkbox"/>										
D038	Pyridine	<input type="checkbox"/> <input checked="" type="checkbox"/>										
D039	Tetrachloroethylene	<input type="checkbox"/> <input checked="" type="checkbox"/>										
D040	Trichloroethylene	<input type="checkbox"/> <input checked="" type="checkbox"/>										
D043	Vinyl chloride	<input type="checkbox"/> <input checked="" type="checkbox"/>										
Semi-Volatiles:												
D023	o-Cresol	<input type="checkbox"/> <input checked="" type="checkbox"/>										
D024	m-Cresol	<input type="checkbox"/> <input checked="" type="checkbox"/>										
D025	p-Cresol	<input type="checkbox"/> <input checked="" type="checkbox"/>										
D026	Cresol	<input type="checkbox"/> <input checked="" type="checkbox"/>										
D030	2,4-Dinitrotoluene	<input type="checkbox"/> <input checked="" type="checkbox"/>										
D032	Hexachlorobenzene	<input type="checkbox"/> <input checked="" type="checkbox"/>										
D033	Hexachlorobutadiene	<input type="checkbox"/> <input checked="" type="checkbox"/>										
D034	Hexachloroethane	<input type="checkbox"/> <input checked="" type="checkbox"/>										
D036	Nitrobenzene	<input type="checkbox"/> <input checked="" type="checkbox"/>										
D037	Pentachlorophenol	<input type="checkbox"/> <input checked="" type="checkbox"/>										
D041	2,4,5-Trichlorophenol	<input type="checkbox"/> <input checked="" type="checkbox"/>										
D042	2,4,6-Trichlorophenol	<input type="checkbox"/> <input checked="" type="checkbox"/>										
Pesticides and Herbicides:												
D012	Endrin	<input type="checkbox"/> <input checked="" type="checkbox"/>										
D012	Endrin, Endrin aldehyde	<input type="checkbox"/> <input checked="" type="checkbox"/>										
D013	Lindane, alpha-BHC	<input type="checkbox"/> <input checked="" type="checkbox"/>										
D013	Lindane, beta-BHC	<input type="checkbox"/> <input checked="" type="checkbox"/>										
D013	Lindane, delta-BHC	<input type="checkbox"/> <input checked="" type="checkbox"/>										
D013	Lindane, gamma-BHC (Linda	<input type="checkbox"/> <input checked="" type="checkbox"/>										
D014	Methoxychlor	<input type="checkbox"/> <input checked="" type="checkbox"/>										
D015	Toxaphene	<input type="checkbox"/> <input checked="" type="checkbox"/>										
D016	2,4-D	<input type="checkbox"/> <input checked="" type="checkbox"/>										



MATERIAL AND WASTE CHARACTERIZATION GENERATOR'S CERTIFICATION AND INFORMATION



Interim Waste Tracking System 1.00/01/97

Form 669 (RWTS electronic version 2.0)

1374: Petroleum Spill Materials (1762, N)

C. Characteristics of Material:

2.g RCRA Hazardous Constituents (Concentration Based D004- D043)

EPA CODE	Hazardous Constituent	Exp. 7 (Y, N)	TCLP Values	Type	Expected Composition Range			Representative Sample			Detection Limit	
					From	To	Units	From	To	Units	Limit	Units
Pesticides and Herbicides:												
D017	2,4,5-TP (Silvex)	<input type="checkbox"/>	<input checked="" type="checkbox"/>									
D020	Chlordane	<input type="checkbox"/>	<input checked="" type="checkbox"/>									
D031	Heptachlor	<input type="checkbox"/>	<input checked="" type="checkbox"/>									
D031	Heptachlor epoxide	<input type="checkbox"/>	<input checked="" type="checkbox"/>									

Note: "Type" column designates type of analysis. 1=Approved Methods, 2=Process Knowledge, 3=Both

2.h RCRA Hazardous Constituents (Other)

2.i Underlying Hazardous Constituents



MATERIAL AND WASTE CHARACTERIZATION GENERATOR'S CERTIFICATION AND INFORMATION



INEL Health, Safety & Environment Laboratory

Form 689 (INITS electronic version 2.0)

1374: Petroleum Spill Materials (1752, N)

C. Characteristics of Material

3. Radiological Characteristics of Material:

a. For MLLW and MTRU give (check one) ☒ Known or ☐ Estimated date of initial generation _____

b. ☐ Yes ☐ No Is waste treatment plan for MLLW on file with INEL MLLW coordinator?

c. ☐ Yes ☐ No Is fissile material present? If yes, waste matrix group is: _____

d. ☐ Yes ☐ No Are transuranic isotopes present? If yes, complete items 3e, 3f, and 3h.

e. Total transuranic activity per gram of waste is:

☐ Yes ☐ No ≤ 10 nCi/g (LLW)

☐ Yes ☐ No > 10 nCi/g and ≤ 100 nCi/g, (SCW)

☐ Yes ☐ No > 100 nCi/g (TRU)

f. Transuranic isotope inventory:

g. ☐ Yes ☐ No Is U-233 or U-235 present? If yes, complete data below and item 3a.

h. Fissionable material range summation:

i. ☐ Yes ☐ No Are other isotopes present? If yes, complete data below.

j. Nuclear thermal power range: _____ to _____ watts/ft³

k. Expected radiation dose rate at surface: _____ to _____ mrem/hr,
at 1-meter: _____ to _____ mrem/hr.

l. ☐ Yes ☐ No Is the waste special case waste? Include determination documentation.

m. ☐ Yes ☐ No Is the waste greater than Class C as defined in 10 CFR 61.55?

n. RWMIS Content Codes:

Supplemental Information

A. Containers Defined to Date:

B. Profile Change History:

User Name	Date	Time	Explanation
SHEPHERDL	10-May-99	9:51 AM	Continuance of Edit Log note:3) Backhoe#75656 had hose failure near CFA 622 on 4/19/99 to asphalt/pavement, generating 1 X 55 gal. Drum of spill cleanup with absorbents for landfill disposal due to presence of absorbents which are not conducive to landfill treatment due to methods employed at the landfill.
SHEPHERDL	10-May-99	9:35 AM	SHEPHERDL GI. Call Point-4. Authorized on Unit. Authorized on Action. Overall Authorization Passed.
SHEPHERDL	10-May-99	8:58 AM	SHEPHERDL GI. Call Point-6. Authorized on Unit. Authorized on Action. Overall Authorization Passed.
SHEPHERDL	10-May-99	8:56 AM	Each spill cleanup requires case-by-case review/approval. WID#1374 Update#8 is for 2 diesel spill cleanups: 1) Rose Trucking spill near entrance of guard gate includes small 30 gal. Drum of soil/gravel, and absorbents & a small bag of PPE for landfill disposal due to



MATERIAL AND WASTE CHARACTERIZATION GENERATOR'S CERTIFICATION AND INFORMATION



INEL National Environmental Laboratory

Form 659 (IWTS electronic version 2.0)

1374: Petroleum Spill Materials (1752, N)

Supplemental Information

User Name	Date	Time	Explanation
			presence of absorbents; 2) Trackhoe topping-off spill on 4/8/99 outside TRA consisting of < 1 cu.yd. Soil for Landfarm treatment. This 4 X 55 gal. drums need to be tracked on Landfarm treatment records as 1374-8. WID#1374 Updates#9 is for 3 hydraulic fluid spill cleanups: 1) Crane damaged by DELTA barrier on 2/18/99 at INTEC entrance generated 2 X 55 gal. Drums of gravel & corncob absorbents. Is approved for landfill disposal due to presence of absorbents; 2) a bidders equipment at CFA674 Excels yard sprayed hyd. fluid on gravel on 4/13/99. This 1 X 55 gal. lined drum for Landfarm Treatment needs to be tracked on landfarm records as 1374-9; 3) Backhoe #75658 had hose failure near CFA622 on 4/19/99 generating <1 cu.yd. To be trac
SHEPHERDL	10-May-99	8:11 AM	SHEPHERDL, GI, Call Point-4. Authorized on Unit. Authorized on Action. Overall Authorization Passed.
SATOS	06-May-99	2:47 PM	unlocked for the purpose of modifying this profile.
SATOS	06-May-99	2:47 PM	SATOS, GI, Call Point-4. Authorized on Unit. Action Authorization Failed. Overall Authorization Passed.
SATOS	06-May-99	2:17 PM	SATOS, GI, Call Point-5. Authorized on Unit. Action Authorization Failed. Overall Authorization Passed.
SATOS	06-May-99	2:16 PM	unlocked for the purpose of modifying this profile.
SATOS	06-May-99	2:16 PM	SATOS, GI, Call Point-4. Authorized on Unit. Action Authorization Failed. Overall Authorization Passed.

The End

WASTE STREAM ID 1374 UPDATE#8 DIESEL SPILLS

- 1) Rose Trucking diesel spill near entrance of Guard Gate includes small 30 gal. Drum of soil, gravel, and absorbants & a small plastic bag of PPE. This approved for landfill disposal rather than landfarm treatment due to presence of absorbants which are not conducive to treatment methods employed at the Landfarm Treatment Area.
- 2) Trackhoe topping-off diesel spill on 4/8/99 outside TRA consisting of < 1 cu.yd. soil for Landfarm Treatment. This 4 X 55 gal. Drums are approved for Landfarm Treatment per exemptions established for < 1 cu.yd. spill cleanups in DEQ's response to DOE-ID's request (OPE-SP-94-380). Track this on Landfarm Treatment records as 1374-8.

WASTE STREAM ID#1374 UPDATE #9 HYDRAULIC FLUID SPILLS

- 1) Crane damaged by DELTA barrier on 2/18/99 at INTEC entrance generated 2 X 55 gal. Drums of hydraulic fluid contaminated gravel & corncob absorbants. These 2 drums are for landfill disposal rather than landfarm treatment due to presence of absorbants which are not conducive to treatment methods employed at the Landfarm Treatment Area.
- 2) Backhoe #75636 had a hydraulic hose failure near CFA 622 on 4/19/99 spilling fluid to asphalt/pavement generating 1 X 55 gal. Drum of gravel/absorbants. This drum is also for landfill disposal rather than landfarm treatment due to presence of absorbants.
- 3) A metal recycler's equipment at CFA 674 Excess Warehouse yard sprayed hydraulic fluid on gravel on 4/13/99. This 1 X 55 gal. Lined drum is for Landfarm treatment per exemptions established for < 1 cu.yd. spill cleanups in DEQ's response to DOE-ID's request (OPE-SP-94-380). Track this on the Landfarm records as 1374-9.

Appendix H

North and South Cold Waste Pond Sampling Data



Lockheed Martin Idaho Technologies Company

INTERDEPARTMENTAL COMMUNICATION

Date: September 30, 1999

To: Aubrey Jones MS 3960 6-2850

From: R.L. Cummins *RLC* MS 7111 3-4491

Subject: RESULTS OF OU 2-13 WAG 2 REMEDIAL ACTION SAMPLES
RLC-34-99

Attached are the results for your OU 2-13 WAG 2 REMEDIAL ACTION SAMPLES that were submitted for Gross Alpha/Beta analysis.

The uncertainties given are one standard deviation and show the precision with which the measurements were made. They include uncertainties incurred throughout the measurement process. A blank was run with the samples. The experimental results are in statistical agreement with historical data.

If you have any questions, feel free to call me at 533-4491.

rlc:

Attachment: As Stated

cc: H. D. Williams, MS 3953
W. R. Spruill, MS 4140
J. A. Landis, MS 5311
A. L. Freeman, MS 7111
R. L. Cummins Letter File

THIS INTERDEPARTMENTAL COMMUNICATION LETTER/REPORT HAS NOT BEEN APPROVED FOR EXTERNAL RELEASE AND IS NOT TO BE DISTRIBUTED BEYOND THE INEEL.

OU 2-13 WAG 2 REMEDIAL ACTION - CWP
GROSS ALPHA/BETA RESULTS

	Sample ID	Result	Units	1 sigma uncertainty	MDA
ALPHA	SCWP 11	4.13E-02	pCi/g	3.61E-02	1.22E-01
	SCWP 12	2.42E-01	pCi/g	4.75E-02	1.22E-01
	SCWP 13	1.24E-01	pCi/g	4.55E-01	1.63E+00
	SCWP 14	-1.66E-02	pCi/g	3.52E-02	1.30E-01
	SCWP 15	0.00E+00	pCi/g	3.54E-01	1.28E+00
BETA	SCWP 11	2.34E-01	pCi/g	5.44E-02	1.64E-01
	SCWP 12	4.77E-01	pCi/g	6.07E-02	1.59E-01
	SCWP 13	1.78E-01	pCi/g	5.56E-01	1.89E+00
	SCWP 14	1.62E-01	pCi/g	5.22E-02	1.63E-01
	SCWP 15	7.85E-01	pCi/g	5.08E-01	1.67E+00

Analyzed by: DeCunzio 9/30/99

Approved by: John G. [Signature] 10/4/99

Lockheed Martin Idaho Technologies Company**INTERDEPARTMENTAL COMMUNICATION**

Date: September 28, 1999

To: A. A. Jones MS 3960 6-2850

From: T. C. Sorensen ^{LS} MS 7111 3-4410

Subject: RML GAMMA-RAY ANALYSIS OF FIVE SOIL SAMPLES FROM WAG 2
OU 2-13 REMEDIAL ACTION PROJECT (DOE/ID-10657) - TCS-142-99

Five soil samples were counted/screened for radioactivity content by the Radiation Measurements Laboratory (RML) using standardized high resolution gamma-ray spectrometry techniques. All samples were counted in a standardized and calibrated geometry for 2 hours. The analysis results are recorded on the attached Gamma-Ray Analysis Summary, Table 1, and Table 1-R.

The summary lists the measured activities of 20 gamma-emitting radionuclides for each sample. The preliminary true-positive activities (marked with a "+") from the summary that were determined to be true-positive and "real" are shown on Table 1. The preliminary true-positive activities that were determined to be false-positive are shown on Table 1-R. Evaluation of the results was performed according to standard RML selection criteria as described in procedure DM-1. Also, included in this report is a copy of the chain of custody form and the request for analysis form.

Attachments:
As Stated

cc:

A. L. Freeman, MS 7111
J. A. Landis, MS 5311
C. L. Reese, MS 3954
JW Rogers, MS 7113 *JWR*
W. R. Spruill, MS 4140
H. D. Williams, MS 3953
T. C. Sorensen File

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GAMMA-RAY ANALYSIS SUMMARY 1

WAG 2 OU2-13 REMEDIAL ACTION CONFIRMATION SOIL SAMPLING

COLLECTION PERIOD:
092199 TO 092199

PREPARED BY THE
RADIATION MEASUREMENTS LABORATORY
FOR THE
ENVIRONMENTAL RESTORATION DEPARTMENT

28-SEP-99

LOCKHEED IDAHO TECHNOLOGIES COMPANY
IDAHO NATIONAL ENGINEERING LABORATORY
IDAHO FALLS, IDAHO

CHECKED BY



APPROVED BY



ENVIRONMENTAL RESTORATION DEPARTMENT
WAG 2 OU2-13 REMEDIAL ACTION CONFIRMATION SOIL SAMPLING

SAMPLE INFORMATION

FOR THE PERIOD
092199 TO 092199

ERD ID	COLLECTION DATE	LAB SAMPLE ID	SAMPLE WEIGHT (g)	LAB BACKGROUND ID(S)...		
SCWP 11	092199	D3092299005	527.00	D3060199034	D3070599016	D3080399016
SCWP 12	092199	D2092299004	437.00	D2060199033	D2070599015	D2080399015
SCWP 13	092199	D2092299010	672.00	D2060199033	D2070599015	D2080399015
SCWP 14	092199	D4092199033	529.00	D4060199035	D4070599017	D4080399017
SCWP 15	092199	D4092299006	569.00	D4060199035	D4070599017	D4080399017
						D3090299035
						D2090299034
						D2090299034
						D4090299036
						D4090299036

ENVIRONMENTAL RESTORATION DEPARTMENT
WAG 2 OU2-13 REMEDIAL ACTION CONFIRMATION SOIL SAMPLING
SAMPLE ACTIVITY (PCI/g)

FOR THE PERIOD
092199 TO 092199

ERD ID	MN 54	CO 58	CO 60	ZN 65
SCWP 11	(2 +/- 2)E-02	(8 +/- 19)E-03	+(9.9 +/- 0.6)E-01	(-2 +/- 3)E-02
SCWP 12	(-4 +/- 2)E-02	(-7 +/- 30)E-03	+(2.73 +/- 0.09)E+00	(-4 +/- 6)E-02
SCWP 13	(1.3 +/- 1.5)E-02	(-2.2 +/- 1.5)E-02	+(5.8 +/- 0.3)E-01	+(9 +/- 3)E-02
SCWP 14	(0.0 +/- 1.8)E-02	(8 +/- 15)E-03	+(5.3 +/- 0.3)E-01	(-3 +/- 3)E-02
SCWP 15	(1.4 +/- 1.4)E-02	(5 +/- 17)E-03	+(6.8 +/- 0.3)E-01	(7 +/- 30)E-03
ERD ID	ZR 95	NB 95	RU 103	RURH 106
SCWP 11	(2 +/- 3)E-02	(1.5 +/- 1.8)E-02	(2 +/- 3)E-02	(-3 +/- 2)E-01
SCWP 12	(4 +/- 4)E-02	(2 +/- 3)E-02	(5 +/- 3)E-02	(1 +/- 4)E-01
SCWP 13	(0 +/- 3)E-02	+(3.5 +/- 1.3)E-02	(3 +/- 14)E-03	(-1.7 +/- 1.6)E-01
SCWP 14	(1 +/- 2)E-02	(-3 +/- 16)E-03	(3 +/- 14)E-03	(-7 +/- 15)E-02
SCWP 15	(3 +/- 2)E-02	(-2.8 +/- 1.3)E-02	(-2 +/- 15)E-03	(-1.5 +/- 1.2)E-01
ERD ID	AGM 108	AGM 110	SB 125	CS 134
SCWP 11	(2 +/- 2)E-02	(9 +/- 6)E-02	(9 +/- 7)E-02	(7 +/- 20)E-03
SCWP 12	(5 +/- 30)E-03	+(2.6 +/- 1.0)E-01	(1.3 +/- 1.0)E-01	(5 +/- 3)E-02
SCWP 13	(7 +/- 18)E-03	+(5 +/- 2)E-02	(4 +/- 4)E-02	(0.0 +/- 1.7)E-02
SCWP 14	(0.0 +/- 1.9)E-02	(2 +/- 11)E-03	(2 +/- 4)E-02	(4 +/- 2)E-02
SCWP 15	(-6 +/- 17)E-03	(-1.5 +/- 1.0)E-02	(-4 +/- 4)E-02	(3 +/- 2)E-02
ERD ID	CS 137	CE 144	EU 152	EU 154
SCWP 11	+(1.21 +/- 0.06)E+01	(3 +/- 16)E-02	(8 +/- 7)E-02	(1.2 +/- 0.8)E-01

WAG 2 OU2-13 REMEDIAL ACTION -- CONFIRMATION SOIL SAMPLING
SAMPLE ACTIVITY (PCI/g) CONTINUED

ERD ID	CS 137	CE 144	EU 152	EU 154
SCWP 12	+(2.02 +/- 0.06)E+01	(-8 +/- 20)E-02	(-3 +/- 11)E-02	+(3.3 +/- 0.5)E-01
SCWP 13	+(2.67 +/- 0.09)E+00	(-1.4 +/- 1.1)E-01	(-6 +/- 5)E-02	(5 +/- 40)E-03
SCWP 14	+(4.09 +/- 0.09)E+00	(-1.1 +/- 1.0)E-01	+(1.1 +/- 0.5)E-01	(8 +/- 50)E-03
SCWP 15	+(6.81 +/- 0.11)E+00	(4 +/- 9)E-02	(-2 +/- 6)E-02	+(1.0 +/- 0.2)E-01
ERD ID	EU 155	RA 226	U 235	AM 241
SCWP 11	+(2.0 +/- 0.6)E-01	+(1.9 +/- 0.5)E+00	(5 +/- 13)E-02	+(9 +/- 3)E-01
SCWP 12	+(3.2 +/- 1.1)E-01	+(2.2 +/- 0.9)E+00	(1.0 +/- 1.7)E-01	(7 +/- 5)E-01
SCWP 13	(4 +/- 6)E-02	+(2.2 +/- 0.4)E+00	(8 +/- 10)E-02	(-2 +/- 3)E-01
SCWP 14	(9 +/- 7)E-02	+(1.6 +/- 0.4)E+00	(4 +/- 9)E-02	+(1.3 +/- 0.4)E-01
SCWP 15	+(1.1 +/- 0.4)E-01	+(2.6 +/- 0.6)E+00	(1 +/- 9)E-02	+(2.6 +/- 0.4)E-01

NOTE: a plus sign before a parenthesis "+(" indicates the activity is greater than 2 standard deviations, i.e. true positive.

TABLE 1

ANALYST'S RESULTS OF MANMADE GAMMA-EMITTING RADIONUCLIDES
WAG 2 OU2-13 REMEDIAL ACTION CONFIRMATION SOIL SAMPLING

COLLECTION DATES
092199 TO 092199

ERD sample ID	RML sample ID	Radionuclide (gamma)	Activity(S) (pci/g)	statistical uncertainty	Uncertainties(%) geometry efficiency	Activity(T) (pci/g)
Requested gamma-emitting radionuclides determined to be true-positive.						
SCWP 11	D3092299005	CO 60 CS 137	9.9 +/- 1.21 +/-	0.6)E-01 0.06)E+01	5.0 5.0	9.9 +/- 1.21 +/- 0.9)E-01 0.10)E+01
SCWP 12	D2092299004	CO 60 CS 137	2.73 +/- 2.02 +/-	0.09)E+00 0.06)E+01	5.0 5.0	2.7 +/- 2.02 +/- 0.2)E+00 0.16)E+01
SCWP 13	D2092299010	CO 60 CS 137	5.8 +/- 2.67 +/-	0.3)E-01 0.09)E+00	5.0 5.0	5.8 +/- 2.7 +/- 0.5)E-01 0.2)E+00
SCWP 14	D4092199033	CO 60 CS 137	5.3 +/- 4.09 +/-	0.3)E-01 0.09)E+00	5.0 5.0	5.3 +/- 4.1 +/- 0.5)E-01 0.3)E+00
SCWP 15	D4092299006	CO 60 CS 137 AM 241	6.8 +/- 6.81 +/- 2.6 +/-	0.3)E-01 0.11)E+00 0.4)E-01	5.0 5.0 14.9	6.8 +/- 6.8 +/- 2.6 +/- 0.6)E-01 0.5)E+00 0.4)E-01

Other gamma-emitting radionuclides determined to be true-positive.

None.

NOTES: (1) Activity(S) includes the statistical uncertainty, from counting statistics and photopeak fitting, expressed as 1 standard deviation.
(2) Activity(T) includes the total uncertainty resulting from the statistical, sample/detector geometry and efficiency. These uncertainties have been propagated in quadrature, expressed as 1 standard deviation.

TABLE 1 - R

ANALYST'S RESULTS OF REJECTED GAMMA-EMITTING RADIONUCLIDES

WAG 2 OU2-13 REMEDIAL ACTION CONFIRMATION SOIL SAMPLING

COLLECTION DATES
092199 TO 092199

ERD sample ID	RHL sample ID	Radionuclide (gamma)	Analysis Rejection Code(s) (See the last page for the key.)
Requested gamma-emitting radionuclides determined to be false-positive.			
SCWP 11	D3092299005	EU 155 RA 226 AM 241	8,10,11 13 8,10,11
SCWP 12	D2092299004	AGM 110 EU 154 EU 155 RA 226	1,3,11 3,11 3,10,11 13
SCWP 13	D2092299010	ZN 65 NB 95 AGM 110 RA 226	8,11 1,8,10,11 1,3,8,11 13
SCWP 14	D4092199033	EU 152 RA 226 AM 241	1,3,8,11 13 8,10,11
SCWP 15	D4092299006	EU 154 EU 155 RA 226	8,11 1,3,8,10,11 13

Other gamma-emitting radionuclides determined to be false-positive.

None.

WAG 2 OU2-13 REMEDIAL ACTION CONFIRMATION SOIL SAMPLING

TABLE 1 -R CONTINUED

Rejection Criteria Codes:	
1. Uncertainty too high to be accepted by analyst.	9. Activity artificially increased by background correction.
2. Area counts too low to be accepted by analyst.	10. Other radionuclide gamma-ray interferences.
3. Radionuclide had no supporting photopeaks to make a judgement.	11. Graphical display of analyzed photopeaks showed unacceptable photopeak fitting results.
4. Energy calibration change/gain shift.	12. No parent activity, therefore the state of equilibrium is unknown and the radionuclide cannot be quantified.
5. Analyst determined that spectral characteristics could not be adequately interpreted by routine computer analysis.	13. Naturally occurring radionuclide with expected activity.
6. Reduced chi-squared (photopeak fit) unacceptable by analyst.	14. Other
7. Peak width unacceptable by analyst.	
8. Radionuclide result below quoted RML detection limits.	

LIMITCO RADIOANALYTICAL SERVICES
ANALYSIS REQUEST FORM

Sample Coordinator: Phone 533-4158, Pager #7320, MS 7111

Project Name:

WAG 2 OV 2-13 Remediation Action

SOW/TOS #:

Charge # 3XAC13504

Total # Samples:

5

Sample Container(s):

Contact

less than 0.1

mR/hr

External Smear(s):

<1000

dpm/100cm² (alpha):

<20

dpm/100cm² (beta-gamma)

Submitted By:

WR Spruill

Ext. 2284

MS: 4140

Technical Contact:

J.A. Landis

Ext. 6311

MS: 5311

Send Results To:

HARRY WILLIAMS, Craig Reese, J.A. Landis, R Spruill
(* include distribution list for results in comment section if possible.)

Ext. 6311

MS:

Sample Disposal Contact:

J.A. Landis

Ext.

MS:

Report Type: (Check one)

☐ Verbal

☐ Int. Tech. Rpt

☐ Summary

☒ Letter

☐ Haz. Waste Form 435.02

Sample Type: (Provide detailed description plus process knowledge and known hazards):

soils from south side waste Pond

Sample ID# (If > 2 list on chain of custody)

Collection Date

Time

BLOCK I - TYPE OF ANALYSIS REQUESTED

ALPHA (526-5447)

Gross Alpha

Total Spectrometric Alpha

Am - 241

Cm - 244

Np - 237

Pu ISO

Th ISO

U ISO

BETA (526-5447)

C - 14

Fe - 55

H - 3

Ni - 63

Pb - 210

Sr - 89/90

Sr - 90

Sr Total

Tc - 99

Gross Beta

GAMMA (533-4158)

Screen Analysis

Full Spec. Analysis

(*Not applicable to solids)

Filter On (date, time)

Filter Off (date, time)

of Cans

Stack Flow (cfm)

Filter Flow (cfm)

Collection Duration (hrs)

Filter Fraction Area (%)

Air Filter Analysis:

Gamma

Gross Alpha/Beta

For RML Use Only:

Gross A/B Completion

Gamma RML ID:

For Lab Use Only:

Received By:

Date/Time: 21 SEP 99 1 0902

Chain of Custody Number(s):

11050

Report Due Date:

Comments:

Sampler/Field Team Leader: (Printed)				Sampler/Field Team Leader: (Signature)				Project Name: <u>WAG 2 002-13</u>				Statement of Work No:			
J.A. LAWRENCE				<i>J.A. Lawrence</i>				Characterization Plan No: <u>DAE/TA 10657</u>							
Laboratory Shipped To: <u>TZA</u>															
Sample No.	Sample Date	Sample Time	Comp	Grab	Sample Location	Aqueous	Solid	Rad	Metals	Volatiles	Semi Volatiles	Gamma ISO	Alpha/Beta	Preservative	Remarks (Depth)
SCWP 11	9/21/99	0815			SOUTH COAST WASTE POND									N/A	0-0.5
SCWP 12	9/21/99	0820												N/A	0-0.5
SCWP 13	9/21/99	0825												N/A	0-0.5
SCWP 14	9/21/99	0830												N/A	0-0.5
SCWP 15	9/21/99	0835			SOUTH COAST WASTE POND									N/A	0-0.5
WAG 2 002-13															
<i>J.A. Lawrence</i>															
Special Instructions:															
Cooler Numbers:															
Relinquished by: (Sig)		Date	Time	Received by: (Sig)		Date	Time	Relinquished by: (Sig)		Date	Time	Received by: (Sig)		Date	Time
<i>J.A. Lawrence</i>		9/21/99	0902	<i>J.A. Lawrence</i>		9/21/99	0902								
Distribution: Original & Yellow: Accompany shipment to laboratory Pink: Forward to Administrative Records and Document Control Green: Retained by Project File															

Lockheed Martin Idaho Technologies Company**INTERDEPARTMENTAL COMMUNICATION**

Date: September 15, 1999

To: A. A. Jones MS 3960 6-2850

From: T. C. Sorensen *TCS* MS 7111 3-4410

Subject: RML GAMMA-RAY ANALYSIS OF TEN SOIL SAMPLES FROM WAG 2
OU 2-13 REMEDIAL ACTION PROJECT (DOE/ID-10657) - TCS-134-99

Ten soil samples were counted/screened for radioactivity content by the Radiation Measurements Laboratory (RML) using standardized high resolution gamma-ray spectrometry techniques. All samples were counted in a standardized and calibrated geometry for 2 hours. The analysis results are recorded on the attached Gamma-Ray Analysis Summary, Table 1, and Table 1-R.

The summary lists the measured activities of 20 gamma-emitting radionuclides for each sample. The preliminary true-positive activities (marked with a "+") from the summary that were determined to be true-positive and "real" are shown on Table 1. The preliminary true-positive activities that were determined to be false-positive are shown on Table 1-R. Evaluation of the results was performed according to standard RML selection criteria as described in procedure DM-1. Also, included in this report is a copy of the chain of custody form and the request for analysis form.

Attachments:
As Stated

cc:

A. L. Freeman, MS 7111
J. A. Landis, MS 5311
JW Rogers, MS 7113 *JWR*
W. R. Spruill, MS 4140
H. D. Williams, MS 3953
T. C. Sorensen File

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GAMMA-RAY ANALYSIS SUMMARY 1

WAG 2 O02-13 REMEDIAL ACTION CONFIRMATION SOIL SAMPLING

COLLECTION PERIOD:
083199 TO 083199

PREPARED BY THE
RADIATION MEASUREMENTS LABORATORY
FOR THE
ENVIRONMENTAL RESTORATION DEPARTMENT

15-SEP-99

LOCKHEED IDAHO TECHNOLOGIES COMPANY
IDAHO NATIONAL ENGINEERING LABORATORY
IDAHO FALLS, IDAHO

CHECKED BY

APPROVED BY




ENVIRONMENTAL RESTORATION DEPARTMENT
WAG 2 OU2-13 REMEDIAL ACTION CONFIRMATION SOIL SAMPLING

SAMPLE INFORMATION

FOR THE PERIOD
083199 TO 083199

END ID	COLLECTION DATE	LAB SAMPLE ID	SAMPLE WEIGHT (g)	LAB BACKGROUND ID(S)...		
SCWP 1	083199	D3090699009	407.00	D3060199034	D3070599016	D3080399016
SCWP 10	083199	A6090699011	540.00	A6060199029	A6070599012	A6080399013
SCWP 2	083199	D2090699008	470.00	D2060199033	D2070599015	D2080399015
SCWP 3	083199	D4090699017	513.00	D4060199035	D4070599017	D4080399017
SCWP 4	083199	D4090699014	361.00	D4060199035	D4070599017	D4080399017
SCWP 5	083199	D2090699012	525.00	D2060199033	D2070599015	D2080399015
SCWP 6	083199	D3090699016	268.00	D3060199034	D3070599016	D3080399016
SCWP 7	083199	D2090699015	501.00	D2060199033	D2070599015	D2080399015
SCWP 8	083199	D4090699010	541.00	D4060199035	D4070599017	D4080399017
SCWP 9	083199	D3090699013	628.00	D3060199034	D3070599016	D3080399016
						D3090299035
						A6090299032
						D2090299034
						D4090299036
						D4090299036
						D2090299034
						D3090299035
						D2090299034
						D4090299036
						D3090299035

ENVIRONMENTAL RESTORATION DEPARTMENT
WAG 2 OU2-13 REMEDIAL ACTION CONFIRMATION SOIL SAMPLING

SAMPLE ACTIVITY (pci/g)

FOR THE PERIOD
083199 TO 083199

ERD ID	NN	54	CO	58	CO	60	ZN	65				
SCWP 1	(	-6 +/-	20)E-03	(	-5 +/-	18)E-03	+(	1.71 +/-	0.08)E+00	(	-8 +/-	4)E-02
SCWP 10	(	-1.3 +/-	1.4)E-02	(	-2.1 +/-	1.6)E-02	+(	5.9 +/-	0.3)E-01	(	0 +/-	3)E-02
SCWP 2	(	3 +/-	2)E-02	(	0 +/-	2)E-02	+(	6.4 +/-	0.5)E-01	(	-3 +/-	3)E-02
SCWP 3	(	3.2 +/-	1.7)E-02	(	-2.2 +/-	1.3)E-02	+(	1.03 +/-	0.05)E+00	(	-3 +/-	3)E-02
SCWP 4	(	3 +/-	3)E-02	(	-5 +/-	20)E-03	+(	2.26 +/-	0.09)E+00	(	-1.3 +/-	0.3)E-01
SCWP 5	(	3.0 +/-	1.8)E-02	(	-1.2 +/-	1.8)E-02	+(	3.2 +/-	0.3)E-01	(	2 +/-	3)E-02
SCWP 6	(	-10 +/-	30)E-03	(	-9 +/-	40)E-03	+(	2.41 +/-	0.12)E+00	(	-9 +/-	5)E-02
SCWP 7	(	-7 +/-	19)E-03	(	4 +/-	2)E-02	+(	1.46 +/-	0.06)E+00	(	-3 +/-	4)E-02
SCWP 8	(	2 +/-	2)E-02	(	-2.6 +/-	1.8)E-02	+(	1.21 +/-	0.04)E+00	(	-9 +/-	30)E-03
SCWP 9	(	7 +/-	16)E-03	(	9 +/-	19)E-03	+(	1.7 +/-	0.2)E-01	(	2 +/-	3)E-02

ERD ID	ZR	95	NB	95	RU	103	RURH	106				
SCWP 1	(	-4 +/-	4)E-02	(	0 +/-	2)E-02	(	3 +/-	20)E-03	(	1 +/-	3)E-01
SCWP 10	(	-5 +/-	30)E-03	(	-2 +/-	2)E-02	(	3 +/-	2)E-02	(	9 +/-	15)E-02
SCWP 2	(	0 +/-	3)E-02	(	-6 +/-	3)E-02	(	-2 +/-	2)E-02	(	1 +/-	2)E-01
SCWP 3	(	9 +/-	30)E-03	(	-3 +/-	2)E-02	+(	6 +/-	2)E-02	(	3 +/-	16)E-02
SCWP 4	(	8 +/-	5)E-02	(	2 +/-	3)E-02	(	-8 +/-	3)E-02	(	3 +/-	30)E-02
SCWP 5	(	-4 +/-	30)E-03	(	-1 +/-	2)E-02	(	-1.1 +/-	1.7)E-02	(	1.8 +/-	1.8)E-01
SCWP 6	(	1.0 +/-	0.7)E-01	(	-2 +/-	3)E-02	(	-4 +/-	4)E-02	(	0 +/-	4)E-01
SCWP 7	(	2 +/-	4)E-02	(	-7 +/-	30)E-03	(	-1 +/-	2)E-02	(	-2.6 +/-	1.9)E-01
SCWP 8	(	7 +/-	30)E-03	(	1.4 +/-	1.4)E-02	(	9 +/-	30)E-03	(	1.0 +/-	1.5)E-01

WAG 2 OU2-13 REMEDIAL ACTION CONFIRMATION SOIL SAMPLING

SAMPLE ACTIVITY (pCi/g) CONTINUED

ERD ID	ZR	95	NB	95	RU	103	RUH	106
SCWP 9	(1 +/-	3)E-02	(2.1 +/-	1.3)E-02	(5 +/-	16)E-03	(-2.1 +/-	1.6)E-01
ERD ID	AGM	108	AGM	110	8B	125	CS	134
SCWP 1	(9 +/-	30)E-03	+(1.0 +/-	0.5)E-01	(7 +/-	7)E-02	(2 +/-	3)E-02
SCWP 10	(-1.2 +/-	1.8)E-02	(-7 +/-	13)E-03	(-6 +/-	5)E-02	+(6 +/-	2)E-02
SCWP 2	(-1 +/-	2)E-02	+(7 +/-	3)E-02	(8 +/-	6)E-02	(4 +/-	2)E-02
SCWP 3	(-1.4 +/-	1.9)E-02	(4 +/-	13)E-03	(-3 +/-	6)E-02	+(8 +/-	2)E-02
SCWP 4	(6 +/-	3)E-02	(-1 +/-	2)E-02	(-7 +/-	10)E-02	(4 +/-	3)E-02
SCWP 5	(0 +/-	2)E-02	(2 +/-	2)E-02	(-3 +/-	5)E-02	(3 +/-	2)E-02
SCWP 6	(4 +/-	4)E-02	(9 +/-	8)E-02	(1.5 +/-	1.2)E-01	(3 +/-	4)E-02
SCWP 7	(3 +/-	2)E-02	(4 +/-	3)E-02	(2 +/-	5)E-02	(2 +/-	2)E-02
SCWP 8	(-3 +/-	20)E-03	(-10 +/-	12)E-03	(-1.0 +/-	0.6)E-01	(6 +/-	20)E-03
SCWP 9	(5 +/-	17)E-03	(2 +/-	2)E-02	(-5 +/-	5)E-02	(3.2 +/-	1.8)E-02
ERD ID	CS	137	CE	144	EU	152	EU	154
SCWP 1	+(7.8 +/-	0.3)E+00	(-8 +/-	17)E-02	(0 +/-	7)E-02	(-5 +/-	4)E-02
SCWP 10	+(7.05 +/-	0.12)E+00	(-2 +/-	11)E-02	(6 +/-	6)E-02	+(1.0 +/-	0.2)E-01
SCWP 2	+(5.79 +/-	0.14)E+00	(1.0 +/-	1.5)E-01	(4 +/-	6)E-02	+(2.0 +/-	0.7)E-01
SCWP 3	+(9.97 +/-	0.19)E+00	(-2 +/-	13)E-02	+(1.2 +/-	0.5)E-01	+(1.7 +/-	0.2)E-01
SCWP 4	+(2.66 +/-	0.04)E+01	(-2 +/-	2)E-01	(3 +/-	10)E-02	+(3.7 +/-	0.7)E-01
SCWP 5	+(2.73 +/-	0.10)E+00	(-1.2 +/-	1.2)E-01	(-1.8 +/-	0.8)E-01	(8 +/-	6)E-02
SCWP 6	+(2.02 +/-	0.07)E+01	(-3 +/-	2)E-01	(-2.0 +/-	1.2)E-01	(-1 +/-	10)E-02
SCWP 7	+(4.56 +/-	0.14)E+00	(-2.0 +/-	1.6)E-01	(-3 +/-	7)E-02	(1.3 +/-	0.6)E-01

WAG 2 OU2-13 REMEDIAL ACTION CONFIRMATION SOIL SAMPLING

SAMPLE ACTIVITY (pCi/g) CONTINUED

ERD ID	CS 137	CE 144	EU 152	EU 154
SCWP 8	+(1.124 +/- 0.019)E+01	(-10 +/- 10)E-02	(0 +/- 5)E-02	(6 +/- 6)E-02
SCWP 9	+(3.59 +/- 0.14)E+00	(0.0 +/- 1.1)E-01	(4 +/- 5)E-02	(7 +/- 4)E-02
ERD ID	EU 155	RA 226	U 235	AM 241
SCWP 1	(1.8 +/- 0.9)E-01	+(2.2 +/- 0.7)E+00	(-7 +/- 13)E-02	(4 +/- 4)E-01
SCWP 10	+(2.0 +/- 0.5)E-01	+(2.6 +/- 0.5)E+00	+(2.7 +/- 1.0)E-01	(2.1 +/- 1.5)E-01
SCWP 2	+(1.9 +/- 0.8)E-01	+(1.5 +/- 0.5)E+00	(-9 +/- 11)E-02	(-3 +/- 3)E-01
SCWP 3	(9 +/- 5)E-02	+(2.1 +/- 0.5)E+00	+(1.3 +/- 0.3)E-01	+(4.3 +/- 0.6)E-01
SCWP 4	(1.4 +/- 0.8)E-01	+(2.7 +/- 0.7)E+00	(2.4 +/- 1.5)E-01	+(1.57 +/- 0.09)E+00
SCWP 5	(1.4 +/- 0.7)E-01	+(2.8 +/- 0.5)E+00	(8 +/- 12)E-02	(-4 +/- 2)E-01
SCWP 6	+(2.8 +/- 0.8)E-01	+(3.6 +/- 1.0)E+00	+(2.6 +/- 0.6)E-01	(1.0 +/- 0.4)E+00
SCWP 7	+(2.3 +/- 0.8)E-01	+(2.6 +/- 0.5)E+00	(-6 +/- 11)E-02	(0 +/- 4)E-01
SCWP 8	+(2.4 +/- 0.4)E-01	+(3.4 +/- 0.5)E+00	(3 +/- 10)E-02	+(4.2 +/- 0.6)E-01
SCWP 9	(4 +/- 6)E-02	+(1.5 +/- 0.6)E+00	(9 +/- 13)E-02	(-4 +/- 2)E-01

NOTE: a plus sign before a parenthesis "+(" indicates the activity is greater than 2 standard deviations, i.e. true positive.

TABLE 1

ANALYST'S RESULTS OF MANMADE GAMMA-EMITTING RADIONUCLIDES

WAG 2 OU2-13 REMEDIAL ACTION CONFIRMATION SOIL SAMPLING

COLLECTION DATES
083199 TO 083199

SRD Sample ID	RML sample ID	Radionuclide (gamma)	Activity(S) (pCi/g)	Uncertainties(%) statistical geometry efficiency	Activity(T) (pCi/g)
Requested gamma-emitting radionuclides determined to be true-positive.					
SCWP 1	D3090699009	CO 60 CS 137	(1.71 +/- 0.08)E+00 (7.8 +/- 0.3)E+00	5.0 5.0	(1.71 +/- 0.15)E+00 (7.8 +/- 0.6)E+00
SCWP 10	A6090699011	CO 60 CS 137	(5.9 +/- 0.3)E-01 (7.05 +/- 0.12)E+00	5.0 5.0	(5.9 +/- 0.5)E-01 (7.1 +/- 0.5)E+00
SCWP 2	D2090699008	CO 60 CS 137	(6.4 +/- 0.5)E-01 (5.79 +/- 0.14)E+00	5.0 5.0	(6.4 +/- 0.7)E-01 (5.8 +/- 0.4)E+00
SCWP 3	D4090699017	CO 60 CS 137 AM 241	(1.03 +/- 0.05)E+00 (9.97 +/- 0.19)E+00 (4.3 +/- 0.6)E-01	5.0 5.0 5.0	(1.03 +/- 0.09)E+00 (1.00 +/- 0.07)E+01 (4.3 +/- 0.6)E-01
SCWP 4	D4090699014	CO 60 CS 137 AM 241	(2.26 +/- 0.09)E+00 (2.66 +/- 0.04)E+01 (1.57 +/- 0.09)E+00	5.0 5.0 5.0	(2.26 +/- 0.18)E+00 (2.66 +/- 0.19)E+01 (1.57 +/- 0.14)E+00
SCWP 5	D2090699012	CO 60 CS 137	(3.2 +/- 0.3)E-01 (2.73 +/- 0.10)E+00	5.0 5.0	(3.2 +/- 0.4)E-01 (2.7 +/- 0.2)E+00
SCWP 6	D3090699016	CO 60 CS 137	(2.41 +/- 0.12)E+00 (2.02 +/- 0.07)E+01	5.0 5.0	(2.4 +/- 0.2)E+00 (2.02 +/- 0.16)E+01
SCWP 7	D2090699015	CO 60 CS 137	(1.46 +/- 0.06)E+00 (4.56 +/- 0.14)E+00	5.0 5.0	(1.46 +/- 0.12)E+00 (4.6 +/- 0.4)E+00
SCWP 8	D4090699010	CO 60 CS 137 AM 241	(1.21 +/- 0.04)E+00 (1.124 +/- 0.019)E+01 (4.2 +/- 0.6)E-01	5.0 5.0 5.0	(1.21 +/- 0.10)E+00 (1.12 +/- 0.08)E+01 (4.2 +/- 0.7)E-01
SCWP 9	D3090699013	CO 60 CS 137	(1.7 +/- 0.2)E-01 (3.59 +/- 0.14)E+00	5.0 5.0	(1.7 +/- 0.2)E-01 (3.6 +/- 0.3)E+00

WAG 2 OU2-13 REMEDIAL ACTION CONFIRMATION SOIL SAMPLING

TABLE 1 CONTINUED

ERD sample ID	NML sample ID	Radionuclide (gamma)	Activity(S) (pCi/g)	statistical uncertainty	Activity(T) (pCi/g)
---------------	---------------	----------------------	---------------------	-------------------------	---------------------

Other gamma-emitting radionuclides determined to be true-positive.

None.

- NOTES: (1) Activity(S) includes the statistical uncertainty, from counting statistics and photopeak fitting, expressed as 1 standard deviation.
 (2) Activity(T) includes the total uncertainty resulting from the statistical, sample/detector geometry and efficiency. These uncertainties have been propagated in quadrature, expressed as 1 standard deviation.

TABLE 1 -R

ANALYST'S RESULTS OF REJECTED GAMMA-EMITTING RADIONUCLIDES

WAO 2 OU2-13 REMEDIAL ACTION CONFIRMATION SOIL SAMPLING

COLLECTION DATES
083199 TO 083199

SRD Sample ID	RML Sample ID	Radionuclide (gamma)	Analysis Rejection Code(s) (See the last page for the key.)
Requested gamma-emitting radionuclides determined to be false-positive.			
SCWP 1	D3090699009	AGM 110 RA 226	1,3,8,11 13
SCWP 10	A6090699011	CS 134 EU 154 EU 155 RA 226 U 235	1,3,8,11 8,10,11 8,10,11 13 1,3,8,11
SCWP 2	D2090699008	AGM 110 EU 154 EU 155 RA 226	1,3,8,11 3,8,10,11 1,3,8,10,11 13
SCWP 3	D4090699017	EU 103 CS 134 EU 152 EU 154 RA 226 U 235	1,3,8,9,11 3,8,11 1,3,8,11 8,10,11 13 3,8,10,11
SCWP 4	D4090699014	EU 154 RA 226	11 13
SCWP 5	D2090699012	RA 226	13
SCWP 6	D3090699016	EU 155 RA 226 U 235 AM 241	8,10,11 13 8,10,11 1,8,9,10,11
SCWP 7	D2090699015	EU 155 RA 226	3,8,10,11 13
SCWP 8	D4090699010	EU 155 RA 226	8,10 13
SCWP 9	D3090699013	RA 226	13

WAG 2 OU2-13 REMEDIAL ACTION CONFIRMATION SOIL SAMPLING

TABLE 1 -R CONTINUED

RAD Sample ID	RML Sample ID	Radionuclide (gamma)	Analysis Rejection Code(s) (See the last page for the key.)
---------------	------------------	-------------------------	--

Other gamma-emitting radionuclides determined to be false-positive.
None.

Rejection Criteria Codes:

- | | |
|---|---|
| <ol style="list-style-type: none"> 1. Uncertainty too high to be accepted by analyst. 2. Area counts too low to be accepted by analyst. 3. Radionuclide had no supporting photopeaks to make a judgement. 4. Energy calibration change/gain shift. 5. Analyst determined that spectral characteristics could not be adequately interpreted by routine computer analysis. 6. Reduced chi-squared (photopeak fit) unacceptable by analyst. 7. Peak width unacceptable by analyst. 8. Radionuclide result below quoted RML detection limits. | <ol style="list-style-type: none"> 9. Activity artificially increased by background correction. 10. Other radionuclide gamma-ray interferences. 11. Graphical display of analyzed photopeaks showed unacceptable photopeak fitting results. 12. No parent activity, therefore the state of equilibrium is unknown and the radionuclide cannot be quantified. 13. Naturally occurring radionuclide with expected activity. 14. Other |
|---|---|

[illegible]

LMITCO RADIOANALYTICAL SERVICES ANALYSIS REQUEST FORM

Sample Coordinator: Phone 533-4158, Pager #7320, MS 7111

Project Name: WABZ OIL-13 Remedial Action

SOW/TOS #: _____ Charge # 3XAC1350A

Total # Samples: 10 Sample Container(s): _____ Contact: LO. 1 mR/hr

External Smear(s): 1000 dpm/100cm² (alpha); 220 dpm/100cm² (beta-gamma)

Submitted By: WR SPRULL Ext. 2284 MS: 4140

Technical Contact: _____ Ext. _____ MS: _____

Send Results To: WR SPRULL Ext. 2284 MS: 4140
(* Include distribution list for results in comment section if possible.)

Sample Disposal Contact: WR SPRULL Ext. 2284 MS: 4140

Report Type: (Check one) ☐ Verbal ☐ Int. Tech. Rpt. ☐ Summary ☒ Letter ☐ Haz. Waste Form 435.02

Sample Type: (Provide detailed description plus process knowledge and known hazards):

Soil Samples FROM South Cold Waste pond

Sample ID# (If > 2 list on chain of custody) _____ Collection Date _____ Time _____

BLOCK I - TYPE OF ANALYSIS REQUESTED

ALPHA (526-5447)

Gross Alpha ✓
Total Spectrometric Alpha _____
Am - 241 _____
Cm - 244 _____
Np - 237 _____
Pu ISO _____
Th ISO _____
U ISO _____

BETA (526-5447)

C - 14 _____
Fe - 55 _____
*H - 3 _____
Ni - 63 _____
Pb - 210 _____
Sr - 89/90 _____
Sr - 90 _____
Sr Total _____
Tc - 99 _____
Gross Beta ✓

GAMMA (533-4158)

Screen Analysis _____
Full Spec. Analysis _____

(*Not applicable to solids)

Filter On (date, time) _____
Filter Off (date, time) _____
of Cans _____
Stack Flow (cfm) _____
Filter Flow (cfm) _____
Collection Duration (hrs) _____
Filter Fraction Area (%) _____

Air Filter Analysis:

Gamma _____
Gross Alpha/Beta _____

For RML Use Only:

Gross A/B Completion _____
Gamma RML ID: _____

For Lab Use Only:

Received By: [Signature] Date/Time: 8/3/99 / 1405

Chain of Custody Number(s): 11049

Report Due Date: _____ Comments: _____

Lockheed Martin Idaho Technologies Company

INTERDEPARTMENTAL COMMUNICATION

Date: September 9, 1999

To: Aubrey Jones MS 3960 6-2850

From: R.L. Cummins *RLC* MS 7111 3-4491

Subject: RESULTS OF OU 2-13 CONFIRMATION SAMPLING

RLC-31-99

Attached are the results for your OU 2-13 CONFIRMATION SAMPLES that were submitted for Gross Alpha/Beta analysis.

The uncertainties given are one standard deviation and show the precision with which the measurements were made. They include uncertainties incurred throughout the measurement process. A blank was run with the samples. The experimental results are in statistical agreement with historical data.

If you have any questions, feel free to call me at 533-4491.

rlc:

Attachment: As Stated

cc: H. D. Williams, MS 3953
W. R. Spruill, MS 4140
J. A. Landis, MS 5311
A. L. Freeman, MS 7111
R. L. Cummins Letter File

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OU 2-13 CONFIRMATION SAMPLING
GROSS ALPHA/BETA RESULTS

	Sample ID	Result	Units	1 sigma uncertainty	MDA
ALPHA	SCWP 1	1.19E-01	pCi/g	4.25E-02	1.27E-01
	SCWP 2	1.09E-01	pCi/g	3.37E-02	9.37E-02
	SCWP 3	1.06E-01	pCi/g	7.68E-01	2.79E+00
	SCWP 4	2.08E-01	pCi/g	4.92E-02	1.32E-01
	SCWP 5	6.23E-03	pCi/g	4.71E-02	1.70E-01
	SCWP 6	6.09E-02	pCi/g	3.15E-02	9.99E-02
	SCWP 7	3.46E-01	pCi/g	6.72E-02	1.59E-01
	SCWP 8	3.90E-02	pCi/g	3.66E-02	1.24E-01
	SCWP 9	-1.34E-01	pCi/g	1.43E-01	5.49E-01
	SCWP 10	5.50E-02	pCi/g	3.85E-02	1.27E-01
BETA	SCWP 1	1.97E-01	pCi/g	6.23E-02	1.95E-01
	SCWP 2	1.64E-01	pCi/g	5.92E-02	1.88E-01
	SCWP 3	-1.07E+00	pCi/g	9.89E-01	3.47E+00
	SCWP 4	5.02E-01	pCi/g	7.16E-02	1.96E-01
	SCWP 5	2.19E-01	pCi/g	8.05E-02	2.56E-01
	SCWP 6	2.71E-01	pCi/g	5.96E-02	1.79E-01
	SCWP 7	2.74E-01	pCi/g	8.98E-02	2.82E-01
	SCWP 8	3.81E-01	pCi/g	6.28E-02	1.79E-01
	SCWP 9	1.38E-01	pCi/g	2.00E-01	6.74E-01
	SCWP 10	8.87E-02	pCi/g	6.30E-02	2.08E-01

Analyzed by: PC 9-9-99

Approved by: John Enrie 9-9-99

Lockheed Martin Idaho Technologies Company**INTERDEPARTMENTAL COMMUNICATION**

Date: June 23, 1999

To: W. R. Spruill MS 4140 6-2284

From: T. C. Sorensen *tes* MS 7111 3-4410

Subject: RML GAMMA-RAY ANALYSIS OF TRA OU 2-13 WARM WASTE POND
EQUIPMENT OIL SAMPLES (June 21 and 22 1999) - TCS-092-99

Six oil samples were counted/screened for radioactivity content by the Radiation Measurements Laboratory (RML) using standardized high resolution gamma-ray spectrometry techniques. The samples were counted for 1 hour in a non-standardized sample geometry. The results of the analysis of the samples are listed on the attached Table 1.

Attachments:
As Stated

cc: A. L. Freeman, MS 7111
J. A. Landis, MS 5311
JW Rogers, MS 7113 *JWR*
T. C. Sorensen File

THIS INTERDEPARTMENTAL COMMUNICATION LETTER/REPORT HAS NOT BEEN
APPROVED FOR EXTERNAL RELEASE AND IS NOT TO BE DISTRIBUTED BEYOND THE
INEEL.

TABLE 1
RADIATION MEASUREMENTS LABORATORY
GAMMA-RAY ANALYSIS RESULTS
6 TRA OU 2-13 WARM WASTE POND EQUIPMENT OIL SAMPLES 6/22/99

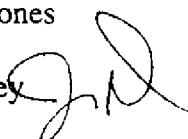
<u>SAMPLE ID</u>	<u>RMT ID</u>	<u>Manmade Radionuclides</u>	<u>Activity</u>	<u>Estimated Bias (%)</u>
1-K03MBW	D2062299039	None Detected	N/A	N/A
2-5320	D1062299038	None Detected	N/A	N/A
3-950CAT4464	D3062299030	None Detected	N/A	N/A
4-5321	D4062299031	None Detected	N/A	N/A
5-4141	D4062299037	None Detected	N/A	N/A
6-4441	D3062299040	None Detected	N/A	N/A

Notes: (1) A "None Detected" under "Manmade Radionuclides" means that the analyst determined that no manmade true radionuclides were present in the respective sample(s).
 (2) The uncertainty associated with any reported activity includes statistical uncertainty and estimated uncertainties in the detector efficiency and the sample geometry (both are typically 5%). Uncertainties are propagated in quadrature and expressed as one standard deviation.
 (3) When a sample's matrix differs radically from that of the calibration standard used by the RMT, the measured activity may not accurately represent the true radionuclide concentration in that sample. In such cases, a non-zero estimated bias is applied in place of the estimated sample geometry; this bias is not propagated into the total uncertainty and is listed separately.

Lockheed Martin Idaho Technologies Company**INTERDEPARTMENTAL COMMUNICATION**

Date: May 25, 1999

To: Aubrey Jones MS 3960 6-2050

From: J. A. Daley  MS 7111 3-4184



Subject: RML GAMMA-RAY ANALYSIS OF FIVE SOIL SAMPLES FROM OU 2-13
WAG 2 CONFIRMATION SAMPLING PROJECT (5/12/99) - JAD-007-99

Five 500 cm³ soil samples of OU 2-13 (WAG 2) confirmation sampling project were counted for radioactivity content by the Radiation Measurements Laboratory (RML) using standardized high-resolution gamma-ray spectrometry techniques. The samples were counted for 2 hours. The results of the analysis of these samples are listed on the attached Table 1. Also included is a copy of the chain of custody submitted with the samples. The project manager has requested the RML utilize ER-TOS-960 (TOS reference) for analysis with this letter.

The uncertainty associated with the measured activity includes the statistical uncertainty and the estimated uncertainty in the detector efficiency (5%) and sample geometry (5%). The uncertainties have been propagated in quadrature and expressed as one standard deviation.

Attachments:
As Stated

cc:

A. L. Freeman, MS 7111
J. A. Landis, MS 5311 
C. P. Oertel, MS 5202
A. H. Owen, MS 7113
T. C. Sorensen, MS 7111 
JW Rogers, MS 7111
J. A. Daley File

THIS INTERDEPARTMENTAL COMMUNICATION LETTER/REPORT HAS NOT BEEN APPROVED FOR EXTERNAL RELEASE AND IS NOT TO BE DISTRIBUTED BEYOND THE INEEL.

TABLE 1

RADIATION MEASUREMENTS LABORATORY

GAMMA-RAY ANALYSIS RESULTS

OU 2-13 WAG 2 CONFIRMATION SAMPLING PRELIMINARY RESULTS AMENDED REPORT 5/17/99

sample ID	RML ID	Manmade Radionuclides	Activity	Estimated Bias (%)
CWP30101	D4051299020	CO-60 CS-137	(1.18 +/- 0.18)E-01 pCi/GM (3.4 +/- 0.3)E+00 pCi/GM	0.0 0.0
CWP30201	D3051299019	CS-137	(1.42 +/- 0.11)E+00 pCi/GM	0.0
CWP30301	A6051299016	CO-60 CS-137	(1 +/- 0.3)E-01 pCi/GM (4.8 +/- 0.4)E+00 pCi/GM	0.0 0.0
CWP30401	D1051299017	CO-60 CS-137	(7.4 +/- 0.7)E-01 pCi/GM (3.9 +/- 0.3)E+00 pCi/GM	0.0 0.0
CWP30401 DUP	D2051299018	CO-60 CS-137	(1.01 +/- 0.09)E+00 pCi/GM (4.9 +/- 0.4)E+00 pCi/GM	0.0 0.0

Notes: (1) A "None Detected" under "Manmade Radionuclides" means that the analyst determined that no manmade true-positive radionuclides were present in the respective sample(s).

(2) The uncertainty associated with any reported activity includes the statistical uncertainty and estimated uncertainties in the detector efficiency and the sample geometry (both are typically 5%). Uncertainties are propagated in quadrature and expressed as one standard deviation.

(3) When a sample's matrix differs radically from that of the calibration standard used by the RML, the measured activity may not accurately represent the true radionuclide concentration in that sample. In such cases, a non-zero estimated bias is applied in place of the estimated sample geometry; this bias is not propagated into the total uncertainty and is listed separately.

Lockheed Martin Idaho Technologies Company

INTERDEPARTMENTAL COMMUNICATION

Date: May 20, 1999

To: Aubrey Jones MS 3960 6-2050

From: T. C. Sorensen ^{TCS} MS 7111 3-4410

Subject: RML GAMMA-RAY ANALYSIS OF FOUR SOIL SAMPLES FROM OU 2-13
WAG 2 CONFIRMATION SAMPLING PROJECT (5/17/99) - TCS-069-99

Twelve 500 cm³ soil samples from OU 2-13 (WAG 2) confirmation sampling project were counted for radioactivity content by the Radiation Measurements Laboratory (RML) using standardized high resolution gamma-ray spectrometry techniques. The samples were counted for 20 minutes. The results of the analysis of these samples is listed on the attached Table 1. Also included is a copy of the chain of custody submitted with the samples. The project manager has requested the RML utilize ER-TOS-960 (TOS reference) for analysis with this letter.

The uncertainty associated with the measured activity includes the statistical uncertainty and the estimated uncertainty in the detector efficiency (5%) and sample geometry (5%). The uncertainties have been propagated in quadrature and expressed as one standard deviation.

Attachments:
As Stated

cc: A. L. Freeman, MS 7111
J. A. Landis, MS 5311
R. K. Murray, MS 7111 *RM*
C. P. Oertel, MS 5202
A. H. Owen, MS 5202
C. L. Reese, MS 3954
JW Rogers, MS 7113
T. C. Sorensen File

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TABLE 1

RADIATION MEASUREMENTS LABORATORY

GAMMA-RAY ANALYSIS RESULTS

OU 2-13 WAG 2 CONFIRMATION SAMPLING - 5/17/99

Sample ID	RML ID	Manmade Radionuclides	Activity	Estimated Bias (%)
CWP30501	D3051899052	CS-137	(2.0 +/- 0.2)E-03 nCi/GM	0.0
CWP30601	D2051899047	CS-137	(1.54 +/- 0.17)E-03 nCi/GM	0.0
CWP30701	D4051899053	CO-60 CS-137	(4.2 +/- 0.7)E-04 nCi/GM (1.03 +/- 0.08)E-02 nCi/GM	0.0 0.0
CWP30801	D2051899051	CO-60 CS-137	(3.5 +/- 0.7)E-04 nCi/GM (9.6 +/- 0.8)E-03 nCi/GM	0.0 0.0
CWP30901	D3051899048	CS-137	(3.5 +/- 0.3)E-03 nCi/GM	0.0
CWP31001	D4051899046	CS-137	(4.5 +/- 0.4)E-03 nCi/GM	0.0
CWP31101	D1051899050	CS-137	(8.2 +/- 0.7)E-03 nCi/GM	0.0
CWP31201	D4051899049	CO-60 CS-137	(2.4 +/- 0.5)E-04 nCi/GM (7.4 +/- 0.6)E-03 nCi/GM	0.0 0.0
CWP31301	D2051899044	CS-137	(3.7 +/- 0.4)E-03 nCi/GM	0.0
CWP31401	D3051899045	CS-137	(1.9 +/- 0.2)E-03 nCi/GM	0.0
CWP31501	D4051899040	CS-137	(5.3 +/- 0.4)E-03 nCi/GM	0.0
CWP31501 DUP	D3051899039	CS-137	(4.0 +/- 0.3)E-03 nCi/GM	0.0

- Notes: (1) A "true detected" under "Manmade Radionuclides" means that the analyst determined that no manmade true-positive radionuclides were present in the respective sample(s).
- (2) The uncertainty associated with any reported activity includes the statistical uncertainty and estimated uncertainties in the detector efficiency and the sample geometry (both are typically 5%). Uncertainties are propagated in quadrature and expressed as one standard deviation.
- (3) When a sample's matrix differs radically from that of the calibration standard used by the RML, the measured activity may not accurately represent the true radionuclide concentration in that sample. In such cases, a non-zero estimated bias is applied in place of the estimated sample geometry; this bias is not propagated into the total uncertainty and is listed separately.

Lockheed Martin Idaho Technologies Company

INTERDEPARTMENTAL COMMUNICATION

Date: May 20, 1999

To: Aubrey Jones MS 3960 6-2850

From: R.L. Cummins *RLC* MS 7111 3-4491

Subject: RESULTS OF WAG 2 CONFIRMATION SAMPLES
RLC-18-99

Attached are the results for your WAG 2 CONFIRMATION SAMPLES (CWP30501-CWP31501) that were submitted for Gross Alpha/Beta analysis.

The uncertainties given are one standard deviation and show the precision with which the measurements were made. They include uncertainties incurred throughout the measurement process. The results must be interpreted statistically at whatever confidence level desired. If the result is less than twice the uncertainty, or if the result is negative no activity was detected at the 95% confidence level. If the result is greater than twice the uncertainty, statistically positive activity was detected at the 95% confidence level.

A blank was run with the samples. The experimental results are in statistical agreement with historical data.

If you have any questions, feel free to call me at 533-4491.

rlc:

Attachment: As Stated

cc: J. A. Landis, MS 5311
Craig L Reese, MS 3954
A. L. Freeman, MS 7111
R. L. Cummins Letter File

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TABLE 1

ANALYTICAL RADIOCHEMISTRY LABORATORY

BETA ANALYSIS RESULTS

OU 2-13 WAG 2 CONFIRMATION SAMPLING

Sample Submitted By: J.A. LANDIS

Analyzed By: Russell C. [Signature]

Date Generated: 20-MAY-99

Laboratory Sample Number	Customer Sample Number	Nuclide Identification	Nuclide Activity (one sigma uncertainties)	
A978 -1	CWP30501	GA	(1.0 +/-	0.6)E+00 pCi/g
-1		GB	(0.0 +/-	1.3)E+00 pCi/g
A979 -1	CWP30601	GA	(3.4 +/-	0.8)E+00 pCi/g
-1		GB	(4.1 +/-	1.4)E+00 pCi/g
A980 -1	CWP30701	GA	(1.8 +/-	0.6)E+00 pCi/g
-1		GB	(6.2 +/-	1.4)E+00 pCi/g
A981 -1	CWP30801	GA	(2.6 +/-	0.7)E+00 pCi/g
-1		GB	(1.60 +/-	0.16)E+01 pCi/g
A982 -1	CWP30901	GA	(8 +/-	2)E-01 pCi/g
-1		GB	(2.3 +/-	0.4)E+00 pCi/g
A983 -1	CWP31001	GA	(1.3 +/-	0.5)E+00 pCi/g
-1		GB	(2.2 +/-	1.5)E+00 pCi/g
A984 -1	CWP31101	GA	(5.7 +/-	0.9)E+00 pCi/g
-1		GB	(9.9 +/-	1.5)E+00 pCi/g
A985 -1	CWP31201	GA	(1.7 +/-	0.6)E+00 pCi/g
-1		GB	(1.17 +/-	0.16)E+01 pCi/g
A986 -1	CWP31301	GA	(2.1 +/-	0.9)E+00 pCi/g
-1		GB	(1.5 +/-	0.2)E+01 pCi/g
A987 -1	CWP31401	GA	(2.2 +/-	0.6)E+00 pCi/g
-1		GB	(-7 +/-	11)E-01 pCi/g

TABLE 1 CONTINUED

Laboratory Sample Number	Customer Sample Number	Nuclide Identification	Nuclide Activity (one sigma uncertainties)	
A988 -1	CWP31501	GA	(1.4 +/-	0.5)E+00 pCi/G
-1		GB	(2.5 +/-	1.4)E+00 pCi/G
A989 -1	CWP31501 DUP	GA	(1.4 +/-	0.6)E+00 pCi/G
-1		GB	(-2.8 +/-	1.4)E+00 pCi/G

Lockheed Martin Idaho Technologies Company**INTERDEPARTMENTAL COMMUNICATION**

Date: May 18, 1999

To: Aubrey Jones MS 3960 6-2850

From: R.L. Cummins *RLC* MS 7111 3-4491

Subject: RESULTS OF WAG 2 CONFIRMATION SAMPLES
RLC-17-99

Attached are the results for your WAG 2 CONFIRMATION SAMPLES (CWP30101-CWP30401) that were submitted for Gross Alpha/Beta analysis.

The uncertainties given are one standard deviation and show the precision with which the measurements were made. They include uncertainties incurred throughout the measurement process. The results must be interpreted statistically at whatever confidence level desired. If the result is less than twice the uncertainty, or if the result is negative no activity was detected at the 95% confidence level. If the result is greater than twice the uncertainty, statistically positive activity was detected at the 95% confidence level.

A blank was run with the samples. The experimental results are in statistical agreement with historical data.

If you have any questions, feel free to call me at 533-4491.

rlc:

Attachment: As Stated

cc: J. A. Landis, MS 5311
Craig L Reese, MS 3954
A. L. Freeman, MS 7111
R. L. Cummins Letter File

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TABLE 1

ANALYTICAL RADIOCHEMISTRY LABORATORY

BETA ANALYSIS RESULTS

OU 2-13 WAG 2 CONFIRMATION SAMPLING

Sample Submitted By: J.A. LANDIS

Analyzed By: Robert Cummings

Date Generated: 18-MAY-99

Laboratory Sample Number	Customer Sample Number	Nuclide Identification	Nuclide Activity (one sigma uncertainties)	
A969 -1	CWP30101	GA	1.4 +/-	0.5)E+00 pCi/g
-1		GB	4.6 +/-	1.5)E+00 pCi/g
A971 -1	CWP30201	GA	1.4 +/-	0.5)E+00 pCi/g
-1		GB	-5 +/-	10)E-01 pCi/g
A972 -1	CWP30301	GA	2.2 +/-	0.6)E+00 pCi/g
-1		GB	2.42 +/-	0.18)E+01 pCi/g
A973 -1	CWP30401	GA	1.1 +/-	0.5)E+00 pCi/g
-1		GB	2.4 +/-	1.4)E+00 pCi/g
A974 -1	CWP30401 DUP	GA	0.9 +/-	3.0)E-01 pCi/g
-1		GB	0.0 +/-	1.4)E+00 pCi/g
A970 -1	CWP30101 DUP	GA	5.7 +/-	0.9)E+00 pCi/g
-1		GB	1.03 +/-	0.16)E+01 pCi/g

Lockheed Martin Idaho Technologies Company

INTERDEPARTMENTAL COMMUNICATION

Date: May 17, 1999

To: Aubrey Jones MS 3960 6-2850

From: R.L. Cummins *RLC* MS 7111 3-4491

Subject: RESULTS OF WAG 2 CONFIRMATION SAMPLES

RLC-16-99

Attached are the results for your WAG 2 CONFIRMATION SAMPLES that were submitted for Gross Alpha/Beta analysis.

The uncertainties given are one standard deviation and show the precision with which the measurements were made. They include uncertainties incurred throughout the measurement process. The results must be interpreted statistically at whatever confidence level desired. If the result is less than twice the uncertainty, or if the result is negative no activity was detected at the 95% confidence level. If the result is greater than twice the uncertainty, statistically positive activity was detected at the 95% confidence level.

A blank was run with the samples. The experimental results are in statistical agreement with historical data.

If you have any questions, feel free to call me at 533-4491.

rlc:

Attachment: As Stated

cc: J. A. Landis, MS 5311
C. P. Oertel, MS 5202
Adam H. Owen, MS 3953
Craig L Reese, MS 5202
A. L. Freeman, MS 7111
R. L. Cummins Letter File

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TABLE 1

ANALYTICAL RADIOCHEMISTRY LABORATORY

BETA ANALYSIS RESULTS

OU 2-13 WAG 2 CONFIRMATION SAMPLING

Sample Submitted By: J.A. LANDIS

Analyzed By: Russell Cummings

Date Generated: 17-MAY-99

Laboratory Sample Number	Customer Sample Number	Nuclide Identification	Nuclide Activity (one sigma uncertainties)	
A965 -1	GRAB #1	GA	(2.8 +/-	0.6)E+00 pCi/g
-1		GB	(4.5 +/-	0.2)E+01 pCi/g
A966 -1	GRAB #2	GA	(3.3 +/-	0.7)E+00 pCi/g
-1		GB	(5.2 +/-	0.2)E+01 pCi/g
A967 -1	GRAB #3	GA	(5.1 +/-	0.8)E+00 pCi/g
-1		GB	(6.9 +/-	0.3)E+01 pCi/g
A968 -1	GRAB #4	GA	(9 +/-	4)E-01 pCi/g
-1		GB	(6 +/-	13)E-01 pCi/g

Lockheed Martin Idaho Technologies Company

INTERDEPARTMENTAL COMMUNICATION

Date: May 17, 1999

To: Aubrey Jones MS 3960 6-2050

From: T. C. Sorensen *TCS* MS 7111 3-4410

Subject: RML GAMMA-RAY ANALYSIS OF FOUR SOIL SAMPLES FROM OU 2-13
WAG 2 CONFIRMATION SAMPLING PROJECT (5/12/99) - TCS-066-99

Four 500 cm³ soil samples from OU 2-13 (WAG 2) confirmation sampling project were counted for radioactivity content by the Radiation Measurements Laboratory (RML) using standardized high resolution gamma-ray spectrometry techniques. The samples were counted for 2 hours. The results of the analysis of these samples is listed on the attached Table 1. Also included is a copy of the chain of custody submitted with the samples. The project manager has requested the RML utilize ER-TOS-960 (TOS reference) for analysis with this letter.

The uncertainty associated with the measured activity includes the statistical uncertainty and the estimated uncertainty in the detector efficiency (5%) and sample geometry (5%). The uncertainties have been propagated in quadrature and expressed as one standard deviation.

Attachments:
As Stated

cc: A. L. Freeman, MS 7111
J. A. Landis, MS 5311
C. P. Oertel, MS 5202
A. H. Owen, MS 5202
JW Rogers, MS 7113
T. C. Sorensen File

JWR by RML

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TABLE 1

RADIATION MEASUREMENTS LABORATORY

GAMMA-RAY ANALYSIS RESULTS

OU 2-13 WAG 2 CONFIRMATION GRAB SAMPLES - 5/12/99

Sample ID	RML ID	Manmade Radionuclides	Activity		Estimated Bias (%)
GRAB #1	D2051299013	CO-60	(1.04 +/-	0.09)E-03 nCi/GM	0.0
		CS-137	(2.42 +/-	0.19)E-02 nCi/GM	0.0
		EU-154	(5.1 +/-	0.6)E-04 nCi/GM	0.0
		AM-241	(1.6 +/-	0.6)E-03 nCi/GM	0.0
GRAB #2	A6051299012	CO-60	(2.9 +/-	0.4)E-04 nCi/GM	0.0
		CS-137	(1.44 +/-	0.11)E-02 nCi/GM	0.0
		EU-154	(2.4 +/-	0.4)E-04 nCi/GM	0.0
		AM-241	(7.5 +/-	1.6)E-04 nCi/GM	0.0
GRAB #3	D3051299014	CO-60	(3.1 +/-	0.4)E-04 nCi/GM	0.0
		CS-137	(1.61 +/-	0.12)E-02 nCi/GM	0.0
		EU-154	(3.4 +/-	0.4)E-04 nCi/GM	0.0
		AM-241	(7 +/-	3)E-04 nCi/GM	0.0
GRAB #4	D4051299015	CO-60	(4.2 +/-	0.3)E-03 nCi/GM	0.0
		CS-137	(1.30 +/-	0.09)E-02 nCi/GM	0.0
		EU-154	(2.9 +/-	0.3)E-04 nCi/GM	0.0
		AM-241	(6.4 +/-	0.7)E-04 nCi/GM	0.0

Notes: (1) A "None Detected" under "Manmade Radionuclides" means that the analyst determined that no manmade true-positive radionuclides were present in the respective sample(s).

(2) The uncertainty associated with any reported activity includes the statistical uncertainty and estimated uncertainties in the detector efficiency and the sample geometry (both are typically 5%). Uncertainties are propagated in quadrature and expressed as one standard deviation.

(3) When a sample's matrix differs radically from that of the calibration standard used by the RML, the measured activity may not accurately represent the true radionuclide concentration in that sample. In such cases, a non-zero estimated bias is applied in place of the estimated sample geometry; this bias is not propagated into the total uncertainty and is listed separately.

Appendix I

Specification Section 2200 (Earthwork)

SECTION 02200 EARTHWORK

PART 1 GENERAL

1.1 SCOPE OF WORK

1.1.1 Work Included

The Subcontractor shall furnish all materials, labor, tools, and equipment for all types of earthwork to be performed in accordance with this specification and as shown on the design drawings. Earthwork includes grading and excavation; placement of fill and native soil cover materials; placement of engineered barrier material; placement of contaminated materials; disposal of unsuitable materials; and reclamation of borrow areas.

1.1.2 Related Work Specified Elsewhere

- (a) Clearing and Grubbing shall be in accordance with Section 02110 of these specifications.
- (b) Temporary Diversion and Control of Water During Construction shall be in accordance with Section 02140 of these specifications.
- (c) Grades, Lines, and Levels shall be in accordance with Section 02210 of these specifications.
- (d) Excavating, Trenching, and Backfilling shall be in accordance with Section 02222 of these specifications.
- (e) Reclamation Seeding and Mulching shall be in accordance with Section 02930 of these specifications.

1.1.3 Materials Procurement Notification

The Subcontractor shall follow the requirements of the General Condition GC-2 and Vendor Data Schedule (VDS).

1.1.4 Work To be Performed by Others

The Contractor will:

- (a) Review and approve submittals as required by this specification,
- (b) Review and approve results of quality assurance tests and surveying performed for compliance with this specification,
- (c) Document and monitor corrective actions,
- (d) Identify the acceptable on-site borrow locations,

- (e) Have the option to approve all soil compaction equipment prior to use,
- (f) Have the option to inspect and approve surface conditions prior to placement of each layer,
- (g) Have the option to inspect and approve all materials prior to placement, and
- (h) Have the option to perform final inspection and confirm acceptance of earthwork.

1.2 REFERENCE DOCUMENTS

American Society for Testing and Materials (ASTM)

ASTM C 136	Test Method for Sieve Analysis of Fine and Coarse Aggregates.
ASTM D 422	Particle-Size Analysis of Soils.
ASTM D 698	Moisture-Density Relations of Soils and Soil Aggregate Mixtures Using 5.5 lb. (2.49 kg) Rammer and 12-in (305-mm) drop.
ASTM D 1556	Test Method for Density and Unit Weight of Soil in Place by the Sand Cone Method.
ASTM D 2216	Standard Method for Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures.
ASTM D 2487	Classification of Soils for Engineering Purposes.
ASTM D 2922	Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods.
ASTM D 3017	Standard Test Method for Moisture Content of Soil and Soil-Aggregate in Place by Nuclear Methods.
ASTM D 4318	Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

Occupational Safety and Health Administration (OSHA)

Code of Federal Regulations, Part 1926, Subparts P and G.

INEEL Health, Safety and Hazards Prevention Documents

Health and Safety Plan (HASP) for the Remedial Action of Waste Area Group 2, Operable Unit 2-13

LMITCO Hazards Prevention and Control Document, PRD-24.

1.3 SUBMITTALS

1.3.1 Test Reports

The Subcontractor shall submit test reports at the following frequencies:

- (a) Borrow Source Testing - within 2 work days after the performance of the test, as per Specification 02200 (3.5.2).

- (b) Field Placement Tests - Field tests requiring offsite laboratory shall be reported to the Contractor within 2 work days after the performance of the test, as per Section 3.5.3. Field tests that provide immediate results shall be recorded in the Daily Field Report and presented to the Contractor by the end of the same day.
- (c) Field Quality Control Tests - Field tests requiring offsite laboratory shall be reported to the Contractor within 2 work days after the performance of the test. Field tests that provide immediate results shall be recorded in the Daily Field Report and presented to the Contractor by the end of the same day.

1.3.2 Procedures

The Subcontractor shall submit a work plan describing the equipment, materials, and methods to be employed to meet the requirements of this specification to the Contractor for approval 20 calendar days prior to commencement of work. The work plan shall be formatted in accordance with the requirements outlined in the contract special condition titled Construction Work Plan.

The Subcontractor shall submit a Quality Assurance/Quality Control (QA/QC) System Manual as set forth in Section 1.4 and demonstrate construction placement methods in accordance with this specification for the Contractor's written approval 20 calendar days prior to their use.

1.3.3 Certifications

Prior to final acceptance of the work specified herein, the Subcontractor shall submit a letter to the Contractor verifying conformance to the requirements identified in this specification.

1.3.4 Records

The Subcontractor shall submit to the Contractor all field records from surveying, layout, laboratory, and field inspection activities within 4 work days after completion of these activities.

1.4 QUALITY ASSURANCE

The Subcontractor shall comply with LMITCO PLN-125 Quality Program Plan for Environmental Restoration Program and shall submit within 10 working days after notice to proceed through the vendor data schedule a notice of intent to comply.

PART 2 PRODUCTS

2.1 EQUIPMENT AND MATERIALS

2.1.1 Equipment

All equipment and tools shall comply with the safety requirements of the Health and Safety Plan (HASP). All equipment and tools used by the Subcontractor to perform the work shall be subject to inspection by the Contractor before the work is started and shall be maintained in satisfactory working condition at all times. All soil compaction equipment will be inspected for acceptance by the Contractor prior to the start of construction.

The Subcontractor's equipment shall be adequate for and have the capability to perform the indicated earthwork specified herein.

Due to the potential for equipment contamination, all equipment brought to the shall be identified to the Contractor prior to delivery and shall be clean and free of grease and oil spots. Where applicable, tires shall be in a like-new condition, free of slits, and cracks. The Contractor reserves the right to reject equipment not meeting these requirements.

2.1.2 Fill Material

Fill material shall be native soils from borrow locations as designated on the drawings and shall be generally free of plant material, roots larger than 1 inch in diameter, rubble, litter, insect infestation, and other deleterious matter.

2.1.3 Borrow Area Requirements

In the CFA pit, in situ topsoil shall be removed and stockpiled at designated locations prior to the removal of borrow soils. This topsoil is not available for this project.

In all borrow areas, slopes shall be left in a stable and vegetated condition.

2.1.4 Topsoil

Topsoil borrow shall be obtained from Borrow Area TRA 10 and shall meet the following requirements:

- (a) Be free of rubble, litter, insect infestation, and other deleterious matter;
- (b) Be free of rocks larger than 3 inches in diameter.

2.1.5 Gravel

The gravel shall be obtained from an on-site source as designated on the drawings and shall be a mixture of clean coarse sands and fine gravel with the following gradation, determined in accordance with ASTM D422:

<u>Nominal Square Opening Sieve Size</u>	<u>Percent Passing</u>
3/4 inch	95-100
1/2 inch	70-95
3/8 inch	25-50
No. 4	0-15

2.1.6 Cobble

The Subcontractor shall provide cobble material from an off-site location(s) to conform with the following gradation, as determined by ASTM C 136:

<u>Nominal Square Opening Sieve Size</u>	<u>Percent Passing</u>
8 inches	95-100
6 inches	75-95
4 inches	5-55
2 inches	<5

Pre-acceptance QC testing of proposed material for the cobble layer shall be in accordance with Section 3.5.

2.1.7 Rip Rap

The Contractor will provide on-site borrow areas for the rip rap material for the engineered barrier. The Subcontractor shall be responsible for separation, loading, hauling and placement of the rip rap material. The rip rap shall meet the following requirements:

- (a) Most materials shall be taken from the location designated as the Rip Rap Borrow Area, TRA 29.
- (b) The larger basalt rubble in the 12" to plus 24" nominal is preferred for barrier construction. The percentage of material smaller than 4" nominal diameter should be less than 20 percent (visual estimate).
- (c) The proportions by size are estimated to be approximately as follows:

<u>Percent</u>	<u>Size (Ave. Diameter)</u>
30	>24"
30	12"<<24"
30	2"<<12"
10	<2"

PART 3 EXECUTION

3.1 PROTECTION AND SAFETY

- 3.1.1 The Subcontractor shall keep all roads and parking areas adjacent to or part of this project usable at all times. The Subcontractor shall provide all necessary barricades, temporary walkways, lights, signs, signals, etc., for the protection of the workers and the public, as per the standards established by LMITCO PRD-24 in the LMITCO Hazards Prevention and Control Manual and the Occupational Safety and Health Administration (OSHA), Construction Safety and Health Regulation 29 CFR, Part 1926, Subpart G, Signs, Signals, and Barricades, whichever of the two is more stringent.
- 3.1.2 For excavations, trenching, and shoring, the Subcontractor shall comply with Section 02222, Excavation, Trenching, and Backfilling.

- 3.1.3 The Subcontractor shall provide protection necessary to prevent damage to existing structures and facilities indicated on the drawings or indicated by the Contractor to remain in place. The Subcontractor shall restore damaged property to original condition, and obtain written approval from the Contractor.
- 3.1.4 The Subcontractor shall clearly mark and post all laydown areas.
- 3.1.5 The Subcontractor shall mark or otherwise indicate the location of existing monuments and markers, and protect these structures before construction operations commence. The Subcontractor shall be responsible for the marking and/or protection of all necessary objects.
- 3.1.6 During earthwork operations, a representative of the Subcontractor shall be present at all times to observe and identify any areas requiring investigation. The Subcontractor shall notify the Contractor immediately upon the discovery of any field deviations from the drawings or this specification.

3.2 EXISTING UTILITIES

- 3.2.1 There may be existing utilities within the limits of the construction area as shown on the design drawings. Utilities shall be identified by the Contractor and the utilities protected by the Subcontractor. The Contractor shall be immediately notified of the discovery of utilities not shown on the design drawings. The Subcontractor shall follow the guidelines for protection of utilities in accordance with Section 02222 of these specifications.

3.3 DUST CONTROL

- 3.3.1 The Subcontractor shall at all times during all activities minimize the creation and emission of dust. The Subcontractor shall employ means such as water spray and visual observation to control and minimize dust. Source of water will be specified in the RFP, Special Conditions.
- 3.3.2 The Subcontractor shall ensure that unpaved and haul routes are wetted while in use.

3.4 INSTALLATION OF FILL, ENGINEERED BARRIER, AND SOIL COVER MATERIALS

3.4.1 General Requirements

- (a) Stockpiling of clean imported material shall be confined to the Subcontractor's laydown and storage area as approved by the Contractor. Stockpiled materials shall have stable slopes and be evenly graded and self-draining. Materials shall be stockpiled in such a way that precipitation runoff can be monitored and controlled if necessary to prevent escape from the stockpile area. The Subcontractor shall ensure that the stockpiling and handling of contaminated surface soils, if encountered, are confined within the limits of the work area.
- (b) The Subcontractor shall place all materials to the lines, grades, and elevations as shown on the design drawings and as specified in Section 02210 of these specifications.
- (c) The Subcontractor shall not begin placement of materials until after acceptance by the Contractor of the subgrade and placement conditions for all underlying material layers.

- (d) The Subcontractor shall not place materials on frozen surfaces, in standing water, or when materials contain snow, ice, or frozen materials.
- (e) The Subcontractor shall slope temporary grades to direct water away from the construction area to reduce the potential for ponding of water. The Subcontractor shall provide erosion protection as specified in Section 02140 of these specifications.

3.4.2 Existing Grade

The existing grade shall be prepared as required in Section 02110 of these specifications.

3.4.3 Fill Material

- (a) The fill material shall be placed in loose lifts to attain a maximum compacted lift thickness of 6 inches for Native Soil Type A and 10 inches for Native Soil Types B, C1, and C2.
- (b) Soil Type A material shall be compacted with a sheepsfoot roller to a minimum of 95 percent of maximum dry density as determined by ASTM D-698.
- (c) Soil Types B, C1, and C2 material shall be compacted with a minimum of five passes of a smooth steel drum roller. In the event that significant silt or other fine grain materials are involved, the Contractor may direct that a sheepsfoot roller be used at no additional cost.
- (d) Subsequent lifts shall not be placed until acceptance by the Contractor of the previous lift.
- (e) The borrow areas shall be regraded to minimize erosion and sustain vegetation. Reclamation seeding and mulching of the borrow areas shall be in accordance with Section 02930 of these specifications.

3.4.4 Topsoil Layer

- (a) Place the topsoil with a moisture content that minimizes dust production.
- (b) Place the topsoil in maximum 8-inch loose lifts.
- (c) Place the topsoil layer with the minimal compaction obtained only from the normal passage of construction equipment that occurs during placement and grading operations.

3.4.5 Gravel Layers

- 1) Compact each gravel layer using four passes with a smooth drum roller with a minimum of 20,000 pounds operating weight.

3.4.6 Cobble Layer

- (a) Placement conditions will be inspected and approved by the Contractor.

- (b) Place the cobble layer in one or more lifts to attain the final layer thickness.
- (c) Do not initiate placement of subsequent lifts of the rip rap until placement conditions of all underlying lifts have been accepted by the Contractor.

3.4.7 Rip Rap Layer

- (a) The Subcontractor shall demonstrate to the Contractor that the methods of placement will not adversely affect the underlying layers in excess of the tolerances established in Section 02210 of these specifications.
- (b) Placement conditions will be inspected and approved by the Contractor.
- (c) Place rip rap in one continuous layer.
- (d) Do not initiate placement of the rip rap in each respective area until placement conditions of all underlying lifts have been accepted by the Contractor.

3.4.8 Protection of Underlying Layers

- (a) The Subcontractor shall use placement methods which prevent undue disturbance and which maintain and ensure the integrity of the underlying materials. The Subcontractor shall submit, for written approval by the Contractor, the construction method(s) proposed to ensure the protection of the underlying layers.
- (b) Protection of the gravel layers within the engineered barrier are especially vulnerable. Special methods/materials such as M8 A1 Airplane Landing Mat (Steel), available through Rex Tex Sales Co., Dallas, TX, are recommended for consideration.
- (c) Previously installed layers or subgrades disturbed by subsequent construction operations by the Subcontractor or adverse weather shall be reworked to the required placement conditions specified herein and as otherwise approved by the Contractor.

3.5 TESTING

3.5.1 General

The Subcontractor shall be responsible for the performance of all pre-acceptance and placement quality control testing. The Subcontractor shall submit results of laboratory and field testing within 4 work days after completion.

Testing shall be performed by an approved independent soils testing laboratory.

3.5.2 Borrow Source Testing

The Contractor has performed classification tests on representative materials to be used in the construction. Results of these tests are included at the end of this section for general planning information only. The Subcontractor shall periodically test and submit results as follows for each of the material borrow sources.

<u>Material Type</u>	<u>Test Method</u>
(a) Cobble	Gradation (ASTM D422)

The Contractor will review and approve submittals pertaining to borrow source material testing prior to or concurrent with the placement of materials.

3.5.3 Field Placement Testing

The Subcontractor shall be responsible for the performance of all testing and for confirmation of placement conditions. The Subcontractor shall submit test records of all testing for review and acceptance by the Contractor. Table 3.1 outlines the material type, test methods, and test frequency for field placement activities.

3.6 INSPECTION

- 3.6.1 The Subcontractor shall be responsible for pre-operation, operation, and post-operation inspection during the performance of all work.
- 3.6.2 The Contractor reserves the right to inspect all work for compliance with this specification.

3.7 ACCEPTANCE

The Subcontractor shall be responsible for documenting all test results and the number of compaction passes completed per lift. Placed materials not in accordance with the requirements of this specification shall be repaired and/or replaced by the Subcontractor. The Subcontractor shall submit a description of repair and/or replacement methods to the Contractor for written approval before implementation. Acceptance criteria for repaired and/or replaced materials shall be in accordance with the original requirements of this specification.

Areas that do not conform with the compaction specifications shall be investigated by the Subcontractor to determine the extent of the non-conformance. Areas that are of a different material type or that have failed the specifications after recompaction efforts shall undergo additional testing regardless of the testing frequency guidelines. The Contractor will determine when additional testing is required. Additional testing may include One-Point Proctor, Atterberg Limits, and Gradation tests. Results of additional testing shall be submitted to the Contractor for review. Following review of the testing results, the Contractor will determine whether a new moisture-density relationship curve shall be developed or if the Subcontractor shall continue to rework the non-conforming areas to meet specifications. If a new moisture-density relationship curve is produced for a change in soil type, all tests outlined in Table 3.1 shall be conducted for the new material type.

Final acceptance shall be explicitly detailed by survey location, layer description, material type, and lift number or elevation. A final report to the Contractor shall be submitted by the Subcontractor within 20 calendar days of the final acceptance detailing all field survey and QC activities performed during construction operations.

TABLE 3.1
Field Placement Testing Methods and Frequencies¹

Material Type	Test Method ⁴	Frequency ³
A. Native Soil Fill Material	Gradation (ASTM D422)	1 Test per 1000 CY
	Gradation (ASTM D422) (Native Soil Types B, C1, and C2)	1 Test per 5000 CY
	Total Density (ASTM D2922) (Required only for Native Soil Type A) ⁸	4/acre/lift ⁵
	Water Content (ASTM D3017) (Required only for Native Soil Type A)	4/acre/lift ⁶
	Visual Inspection ⁷ (Soil Types B, C1 and C2)	5 passes ²
B. Topsoil Layer (Native Soil)	Gradation (ASTM D422)	1 Test per 1000 CY
	Atterberg Limits (ASTM D4318)	1 Test per 1000 CY
	Classification (ASTM D2487)	1 Test per 1000 CY
	Total Density (ASTM D2922)	Occasional
	Water Content (ASTM D3017)	Occasional
C. Gravel Layer	Gradation (ASTM D422)	1 Test per 1000 CY
	Classification (ASTM D 2487)	1 Test per 1000 CY
	Visual Inspection	4 passes ²
D. Cobble Layer	Gradation (ASTM D422)	1 Test per 1000 CY
E. Rip Rap Layer	Visual Inspection	Daily
	Visual Inspection	Daily

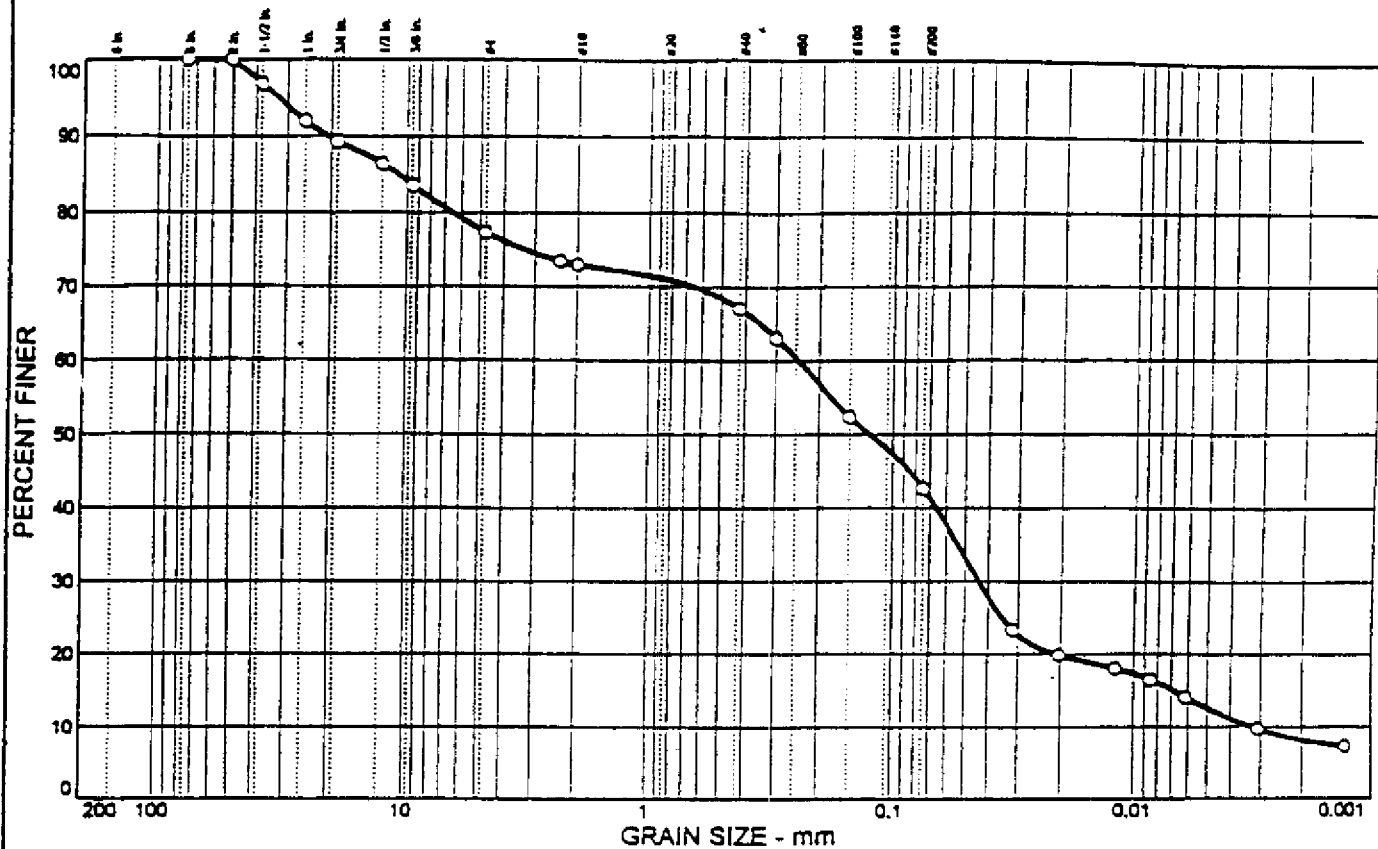
1. Borrow source testing shall be conducted prior to filling operations.
2. Number of Passes Test Method refers to the required documented passes performed by the Subcontractor.
3. Frequency refers to the minimum number of tests required for each respective Test Method.
4. Grab samples shall be taken from the lift materials for each test.
5. Quality Control checks for density shall be conducted for 1 of every 10 Nuclear Method Tests by the Sand Cone Method (ASTM D1556).
6. Quality Control checks for moisture content shall be conducted for 1 of every 10 Nuclear Methods (shallow depth) by Direct Water Content Measurements (ASTM D2216).
7. Results of visual inspection shall be recorded in the Daily Field Report.
8. The Contractor may require occasional density testing for Soil Type B.

Attachment A
Borrow Source Testing



The following pages present test results for borrow samples from the principal designated sources for Types A and B fill material, topsoil, and gravel. This information is included for preliminary planning only.

02200-A13	Gradation, Atterberg Limits, and Classification results for Borrow Area TRA 10.
02200-A14	Moisture-Density Relationship for Borrow Area TRA 10
02200-A15	Gradation, Atterberg Limits, and Classification results for Borrow Area TRA 26.
02200-A16	Moisture-Density Relationship for Borrow Area TRA 26
02200-A17	Gradation for Lincoln Boulevard Pit (gravel)

PARTICLE SIZE DISTRIBUTION TEST REPORT



% + 3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
0	22.7	34.7	30.0	12.6	SC-SM	A-4(0)	14	19

SIEVE inches size	PERCENT FINER		
	0		
3"	100.0		
2"	100.0		
1.5	96.9		
1.0	91.9		
0.75	89.3		
0.50	86.4		
0.375	83.6		
	GRAIN SIZE		
D ₆₀	0.244		
D ₃₀	0.0442		
D ₁₀	0.0033		
	COEFFICIENTS		
C _c	2.43		
C _u	74.26		

SIEVE number size	PERCENT FINER		
	0		
#4	77.3		
#8	73.5		
#10	73.0		
#40	67.1		
#50	63.1		
#100	52.3		
#200	42.6		

SOIL DESCRIPTION	
○ Silty, clayey sand with gravel.	

REMARKS:	
○ Tested to ASTM D-421-422 and related standards.	

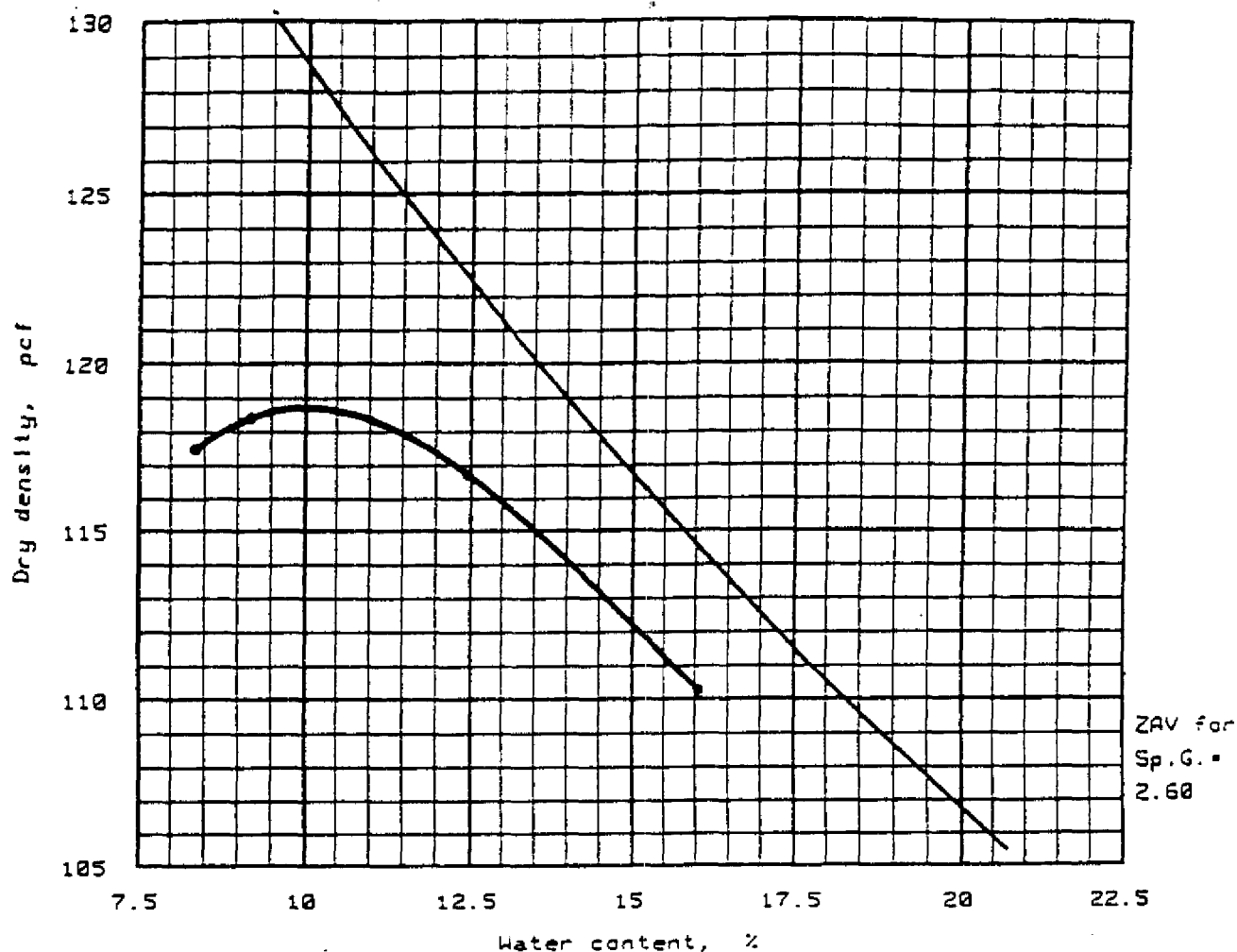
0 Location: TRA 10 rubble pile

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MOISTURE-DENSITY RELATIONSHIP TEST



Test specification: ASTM D 698-91 Method A, Standard
Oversize correction applied to each point

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > No. 4	% < No. 200
	USCS	AASHTO						
	SC-SM	A-4(0)		2.60	19	5	22.7 %	42.6 %

ROCK CORRECTED TEST RESULTS	UNCORRECTED	MATERIAL DESCRIPTION
Maximum dry density = 118.7 pcf Optimum moisture = 10.0 %	118.7 pcf 10.0 %	Silty, clayey sand with gravels.

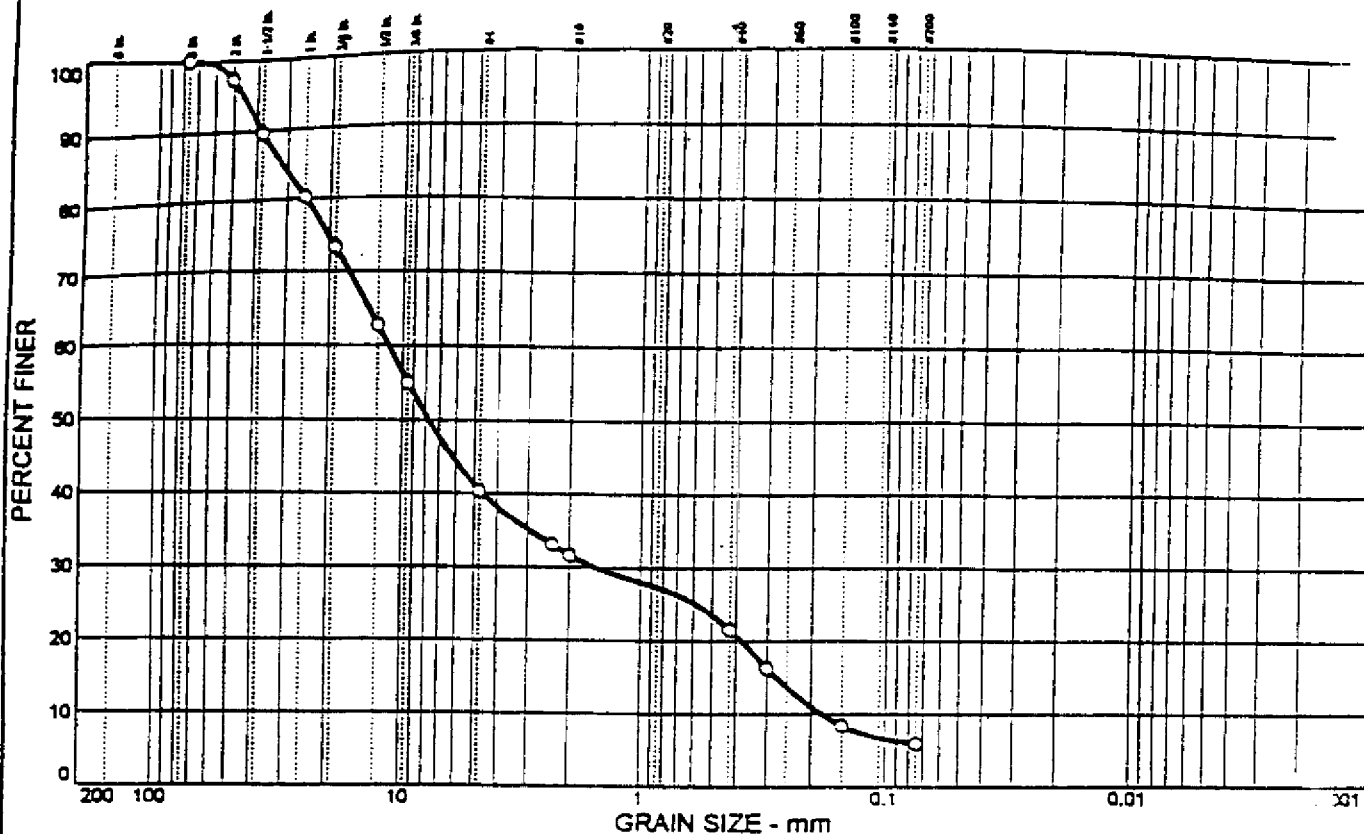
Project No.: 3XAC13103
Project: TRA Warm Waste Pond Remediations.
Location: TRA area, east of TRA perimeter fence.
TRA 10 rubble pile.
Date: 4-08-1998

Remarks:
Sampled from the TRA
rubble pile 10 by R.T.
Jones.

MOISTURE-DENSITY RELATIONSHIP TEST
INEL MATERIALS LAB

Fig. No. _____

PARTICLE SIZE DISTRIBUTION TEST REPORT



% +3"	%	EL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LI
			34.3			GW-GM	A-1-a	NP	NV

SIEVE	PERCENT FINER		
inches	0		
size			
3	100.0		
2"	97.3		
1.5	89.5		
1.0	80.2		
0.75	73.2		
0.50	62.7		
0.375	55.0		
GRAIN SIZE			
D ₆₀	11.5		
D ₃₀	1.57		
D ₁₀	0.183		
COEFFICIENTS			
C _c	1.17		
C _u	62.94		

SIEVE	PERCENT FINER		
number	0		
size			
#4	40.3		
#8	33.0		
#10	31.6		
#40	21.5		
#50	16.2		
#100	8.4		
#200	6.0		

SOIL DESCRIPTION
 O Pit run gravels. Well-graded gravel with silt and sand

REMARKS:
 O Tested to ASTM 421-422 and related standards.

O Location: Stockpile TRA 26 Sewer Plant rubble pile

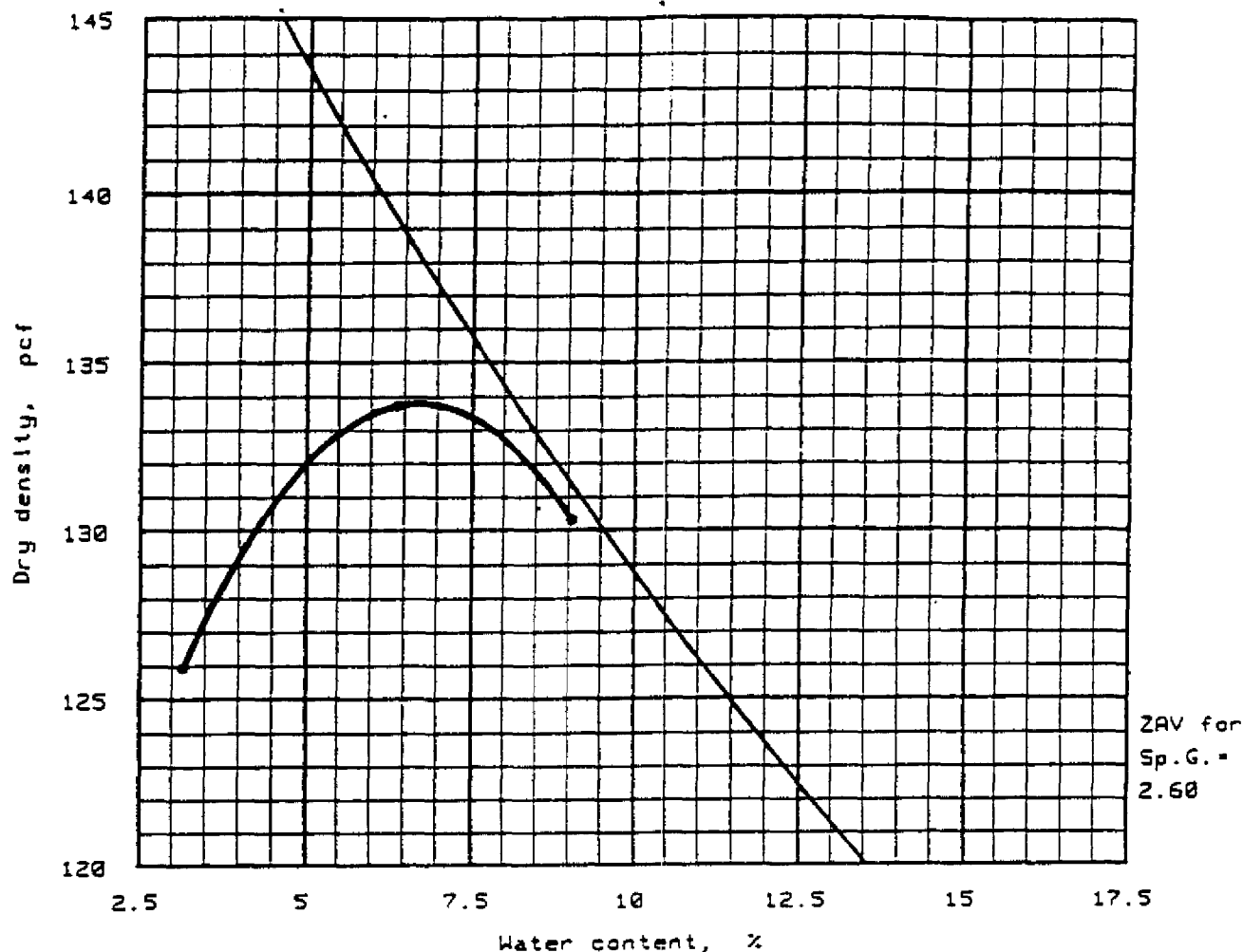
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MOISTURE-DENSITY RELATIONSHIP TEST



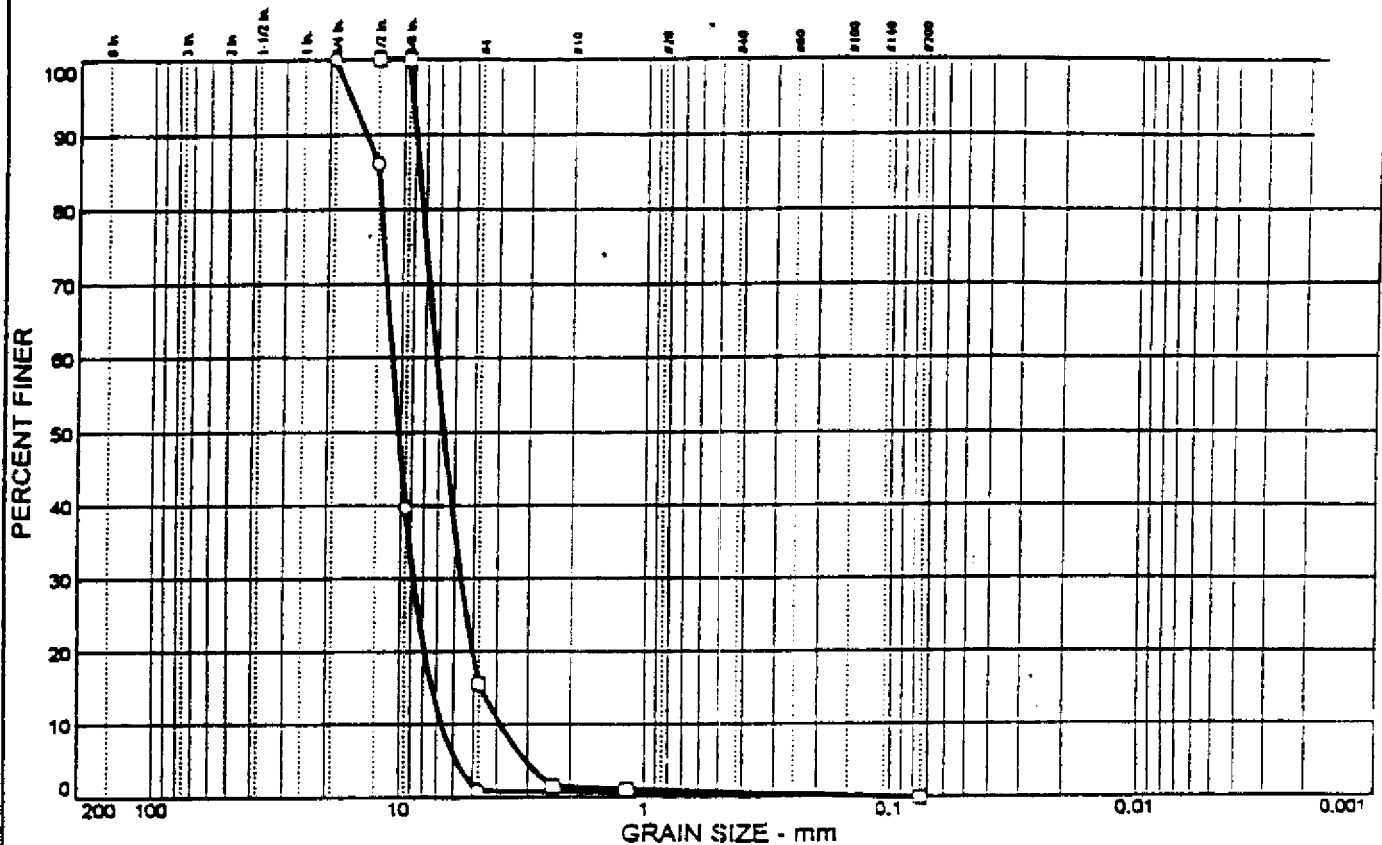
Test specification: ASTM D 698-91 Method C, Standard

Oversize correction applied to final results

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/4 in	% < No.200
	USCS	AASHTO						
	GW-GM	A-1-a		2.60	NV	NP	26.8 %	6.0 %

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 140.7 pcf Optimum moisture = 4.9 %	Pit run gravels, silty gravels with sand.
Project No.: 3XAC13103 Project: TRA Warm Waste Pond Remediations Location: TRA area, east of perimeter fence. <u>Rubble pile 26.</u> Date: 4-08-1998	Remarks: Sampled by R.T. Jones from rubble stockpile 26 near sewer system.
MOISTURE-DENSITY RELATIONSHIP TEST INEL MATERIALS LAB	Fig. No. _____

PARTICLE SIZE DISTRIBUTION TEST REPORT



	% + 3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	L
○		99.0	1.0			GP	A-1-a	NP	
□		84.5	15.5			GP	A-1-a	NP	

SIEVE inches size	PERCENT FINER		SIEVE number size	PERCENT FINER	
	○	□		○	□
3/4	100.0		#4	1.0	15.5
1/2	86.1	100.0	#8		1.6
3/8	39.7	100.0	#16		1.2
			#200	0.0	0.0

GRAIN SIZE		
D ₆₀	10.9	7.20
D ₃₀	8.77	5.61
D ₁₀	6.67	3.87

COEFFICIENTS		
C _c	1.06	1.13
C _u	1.64	1.86

SOIL DESCRIPTION

○ "Chip" stockpile. Poorly graded gravel

□ Chip stockpile. Poorly graded gravel with sand

REMARKS:

○ Sampled from NRF/Lincoln road pit. This material was originally part of a "three bin" plant mix asphalt. This stockpile was "A" pile.

□ Sampled from small chip stockpile located at the INEEL Dairy Farm. This material is from Walters Concrete, Rexburg.

○ Location: NRF/Lincoln blvd. pit, aggregate stockpile.

□ Location: INEEL Dairy Farm Bio-Barrier plot

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